- R2800-14 2/88 -

MULTIPLE INPUT PRODUCTIVITY INDEXES

Volume 7 ISSN 0741-6490 December 1987

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WHAT IS MIPI AND WHAT IS IT GOOD FOR?

This publication presents a set of productivity improvement indexes covering various major portions of the U.S. economy for the period 1948-1985. It is an extension of the indexes published in Productivity in the United States, Trends and Cycles, (Johns Hopkins Press, 1980) by Dr. John W. Kendrick and Dr. Elliot S. Grossman.

There are three essentially independent sets of data that are combined in all their possible combinations to give the different types of indexes. These data sets are: a measure of real output, a measure of labor hours, and an estimate of real capital. From these can be developed:

labor productivity, output/labor

capital productivity, output/capital

total factor productivity, output/labor + capital

capital-labor ratio, capital/labor

The portions of the U.S. economy that are measured are:

Private Business Economy
- Goods Producing Industries
  - Farming
  - Manufacturing
  - Mining
  - Construction

Within manufacturing, the twenty major subdivisions (by two digit SIC codes 20-39) are also provided.

- Service Business Industries
  - Transportation (Rail and Non-Rail)
  - Communications
  - Public Utilities
  - Trade
  - Finance and Insurance
  - Real Estate
  - Other Services
- Nonfinancial Corporate Business

Further information on the data sources and assumptions can be found in Section C.

The Department of Labor's Bureau of Labor Statistics (BLS) publishes an extensive annual set of labor productivity indexes for various manufacturing and non-manufacturing industries. It also publishes total factor productivity indexes for the private business economy and for manufacturing as a whole. The BLS's treatment of capital is slightly different, but the results are quite similar. What the American Productivity Center's collection adds is an extension of total factor productivity analysis to major service components and manufacturing industries of the economy. As will be seen in this presentation, the measurement of service industries is especially relevant because of the surprisingly poor performance of many of these industries in the recent past, a performance problem that is not widely recognized.

I. Why is total factor productivity important?

Labor productivity is the traditional basis for productivity analysis and is a crucial tool in most organizations for efficiency measurement and performance. Improvements in labor productivity can be approached in different ways. Where there is an increase in output with no increase in labor input due to more labor diligence or better work patterns, the gross gain is the same as the net gain. There are no offsetting costs to the increase in labor productivity. But in a "labor-saving" automation project, for example, the gross gain in labor productivity is at least partially offset by the extra cost of the new capital equipment. Total factor productivity allows a net evaluation of improvement. When all costs are considered, was there a net improvement? In other words, a solitary labor productivity improvement measure does not reflect the possibility that there is a critical cost offset in the capital area.

Just as it is dangerous to label an increase in labor productivity as being unquestionably "good," so is it dangerous to label a decrease in capital productivity as unquestionably "bad." Companies and industries invest for the future, and the additional capital cost sometimes hits the books months or years before any extra output is realized. Persistent capital productivity decline in an industry, however, at least merits more detailed inspection as to whether there might be wasteful surplus capacity and/or inventories as well as implicit inefficiencies.

II. How can a single organization use industry productivity data?

The main value of industry data for most organizations is in benchmark setting for planning purposes. Productivity improvement strategies need to set improvement goals, and national data and industry detail give guidance on attainable, realistic targets. It is important to remember that productivity data are customarily presented in "real" dollar or physical terms. There is no need to "throw in a little" to cover inflation. This collection shows that an improvement of 3 or 4 percent per year is very good productivity performance in most industries. Financial managers accustomed to setting double-digit improvement goals in an inflationary environment need to reevaluate their assumptions when dealing with productivity change.

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1986 PRODUCTIVITY PERFORMANCE SHOWS IMPROVEMENT

Compared to the recent past, 1986 was a good year for productivity improvement in the United States. For the private business sector, labor productivity increased 1.9% as compared to a 1979-85 average of 1.3%. Total factor productivity increased 1.5% as compared to a 1979-85 average of 0.7%. These numbers still do not bring us back to the performance of the 1960s, but a step has been taken in the right direction.

The major driver is the manufacturing sector, showing 1986 increases of 3.7% (labor) and 3.1% (total). There were also encouraging improvements in some of the service industries, where not much progress had been seen before. Major contributors were railroads and trade, but these two illustrate radically opposite ways to "improve." Railroads have been improving productivity through moderate decreases in output and capital input and large decreases in labor input...successful downsizing. Mining presents essentially the same pattern. On the other hand, trade, along with real estate, shows large increases in output and capital and moderate increases in labor input...the growth model.

The best sector numbers come from farming: double-digit increases in productivity driven by output increase and input decrease! Communications, still the long-term (1948-86) champion, showed strong labor productivity increase but is being slowed down in total factor productivity by major increases in capital employed. The major losing sector was public utilities, a decline in output being accompanied by continuing increases in labor and capital...not-fully-recognized competition is the applicable model here.

In the manufacturing industries, the story is mixed, as usual. Once again the improvement prize goes to non-electrical machinery, an increase of 15.5% in labor productivity and 13.4% in total productivity. This is driven by a very strong increase in output accompanying a very strong decrease in labor input...it's great if you can do it. This industry has nearly doubled its real output in four years. If this doesn't necessarily fit with the profit results of the industry, remember that price effects are removed in productivity calculations. Thus, low-margin output counts the same as high-margin output.

Industries with improvements coming from output growth are textiles, lumber, chemicals, petroleum, and instruments. Some of these were even able to reduce labor input at the same time! Primary metals shows strong productivity increases with some output growth and strong decreases in labor input.

Industries with declines in productivity tended to have small decreases in output but continued increases in labor and/or capital input. These include food (normally a good improver), furniture, printing, fabricated metals, stone-clay-glass, and transportation equipment. The main decliner is the leather industry with major decreases in output, labor, and capital.

Carl G. Thor

Table I
Multiple Input Productivity
By Major Segment of the Economy
(Selected Periods, 1948 - 1986)

	Average Annual Rates of Change				
	1948-1986	1948-1965	1965-1973	1973-1979	1979-1986
1. Total Factor Productivity					
Business Economy	1.7	2.7	1.5	0.3	0.8
Goods Producing Industries	2.1	3.4	1.3	0.1	1.8
Service Producing Industries	1.4	2.1	1.9	0.5	0.3
Farming	3.6	3.4	2.8	1.8	6.7
Manufacturing Industry	2.1	2.5	1.8	0.6	2.5
Nonfarm Nonmanufacturing Industry	1.1	2.1	0.9	-0.2	-0.2
Nonfinancial Corporate Business	1.5	2.3	1.2	0.2	0.9
2. Labor Productivity (Output per hour worked)					
Business Economy	2.2	3.2	2.1	0.6	1.4
Goods Producing Industries	2.7	4.0	1.7	0.5	2.5
Service Producing Industries	1.9	2.5	2.6	0.7	0.7
Farming	5.0	4.7	4.6	3.1	7.9
Manufacturing Industry	2.7	3.0	2.5	1.4	3.5
Nonfarm Nonmanufacturing Industry	1.5	2.5	1.5	0.0	0.3
Nonfinancial Corporate Business	1.8	2.6	1.5	0.4	1.4
3. Capital Productivity (Output per unit of capital input)					
Business Economy	0.4	1.2	0.0	-0.5	-0.3
Goods Producing Industries	0.3	1.3	-0.2	-1.3	0.3
Service Producing Industries	0.6	1.1	0.6	0.2	-0.5
Farming	0.7	-0.7	-0.2	0.5	5.7
Manufacturing Industry	-0.1	0.6	-0.6	-1.8	0.2
Nonfarm Nonmanufacturing Industry	0.1	1.0	-0.3	-0.5	-1.0
Nonfinancial Corporate Business	0.6	1.4	0.5	-0.4	-0.5

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Table II

Outputs, Inputs and Capital-Labor Ratio
By Major Segment of the Economy
(Selected Periods, 1948 - 1986)

	Average Annual Rates of Change				
	1948-86	1948-65	1965-73	1973-79	1979-86
1. Output (Real product, in 1982 dollars)					
Business Economy	3.2	3.6	3.6	2.5	2.5
Goods Producing Industries	2.6	3.6	2.3	1.3	1.6
Service Producing Industries	3.7	3.6	4.8	3.4	3.1
Farming	1.4	0.2	0.7	1.5	5.0
Manufacturing Industry	3.3	4.0	3.8	1.9	2.2
Nonfarm Nonmanufacturing Industry	3.3	3.7	3.7	2.8	2.5
Nonfinancial Corporate Business	3.7	4.2	4.4	2.7	2.5
2. Labor Input (Hours worked)					
Business Economy	1.0	0.4	1.4	1.9	1.1
Goods Producing Industries	-0.1	-0.4	0.6	0.8	-0.9
Service Producing Industries	1.8	1.1	2.2	2.7	2.4
Farming	-3.4	-4.2	-3.7	-1.5	-2.7
Manufacturing Industry	0.5	1.0	1.2	0.5	-1.2
Nonfarm Nonmanufacturing Industry	1.8	1.1	2.1	2.7	2.2
Nonfinancial Corporate Business	1.8	1.5	2.9	2.3	1.1

Table II (Cont'd)

Outputs, Inputs and Capital-Labor Ratio
By Major Segment of the Economy
(Selected Periods, 1948 - 1986)

	Average Anual Rates of Change				
	1948-86	1948-65	1965-73	1973-79	1979-86
3. Capital Input					
Business Economy	2.8	2.4	3.6	3.1	2.8
Goods Producing Industries	2.2	2.3	2.5	2.7	1.3
Service Producing Industries	3.2	2.5	4.2	3.3	3.6
Farming	0.7	1.0	0.9	1.0	-0.6
Manufacturing Industry	3.4	3.3	4.4	3.8	2.0
Nonfarm Nonmanufacturing Industry	3.2	2.7	4.0	3.3	3.5
Nonfinancial Corporate Business	3.1	2.7	3.9	3.1	3.0
4. Capital - Labor Ratio					
Business Economy	1.9	2.0	2.1	1.2	1.7
Goods Producing Industries	2.3	2.7	1.9	1.9	2.2
Service Producing Industries	1.3	1.3	2.0	0.6	1.2
Farming	4.2	5.4	4.8	2.6	2.2
Manufacturing Industry	2.8	2.3	3.2	3.2	3.2
Nonfarm Nonmanufacturing Industry	1.4	1.6	1.8	0.5	1.3
Nonfinancial Corporate Business	1.2	1.2	1.0	0.8	1.9

Table III a.
Total Factor Productivity
By Major Industries of the Economy
(Selected Periods, 1948 - 86)

	Average Annual Rates of Change				
	1948-86	1948-65	1965-73	1973-79	1979-86
Business Economy	1.7	2.7	1.5	0.3	0.8
Goods Producing Industries	2.1	3.4	1.3	0.1	1.8
Service Producing Industries	1.4	2.1	1.9	0.5	0.3
Farming	3.6	3.4	2.8	1.8	6.7
Manufacturing	2.1	2.5	1.8	0.6	2.5
Food	2.5	2.9	3.6	0.1	2.2
Tobacco	0.4	2.7	2.0	-0.2	-6.1
Textiles	4.0	4.6	2.0	5.7	3.2
Apparel	2.1	1.9	2.7	2.8	1.5
Lumber	2.4	3.8	1.0	1.5	1.4
Furniture	1.5	2.0	1.6	2.1	-0.3
Paper	2.0	2.0	3.7	0.1	1.5
Printing & Publishing	0.9	2.1	0.8	-0.2	-1.0
Chemicals	3.0	4.1	4.0	1.1	1.0
Petroleum	0.8	2.9	0.8	-1.4	-2.1
Rubber	1.8	2.2	1.7	-0.8	3.2
Leather	1.0	1.1	1.8	0.2	0.5
Stone,Clay & Glass	1.4	2.2	1.0	0.5	0.9
Primary Metals	0.2	1.0	0.7	-2.8	0.2
Fabricated Metals	1.4	1.8	1.3	0.0	1.6
Machinery, exc. Elec.	2.8	1.4	1.5	0.4	10.0
Electrical Machinery	3.6	4.2	2.7	3.5	3.3
Transportation Equipment	1.9	3.5	1.2	0.1	0.5
Instruments	3.0	3.6	2.4	2.7	2.5
Miscellaneous Manufactures	2.5	2.6	2.9	0.1	4.1
Nonfarm Nonmanufacturing	1.1	2.1	0.9	-0.2	-0.2
Mining	0.7	3.1	2.0	-6.0	-0.5
Construction	-0.3	2.9	-3.9	-2.2	-1.9
Transportation	1.6	2.1	2.7	1.5	-0.5
Railroad	2.5	4.1	1.8	1.3	0.7
Nonrail	0.8	0.5	2.7	1.3	-0.9
Communications	3.8	5.6	3.4	2.4	1.3
Public Utilities	3.3	5.8	3.0	-0.6	0.9
Trade	2.0	2.6	2.4	0.4	1.4
Finance & Insurance	0.4	1.3	0.6	-0.7	-1.0
Real Estate	0.7	1.8	0.3	1.4	-2.0
Services	0.6	0.4	1.4	0.4	0.3
Nonfinancial Corporate Business	1.5	2.3	1.2	0.2	0.9

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Table III b.
Labor Productivity
(Output per Hour)
By Major Industries of the Economy
(Selected Periods, 1948 - 86)

	Average Annual Rates of Change				
	1948-86	1948-65	1965-73	1973-79	1979-86
Business Economy	2.2	3.2	2.1	0.6	1.4
Goods Producing Industries	2.7	4.0	1.7	0.5	2.5
Service Producing Industries	1.9	2.5	2.6	0.7	0.7
Farming	5.0	4.7	4.6	3.1	7.9
Manufacturing	2.7	3.0	2.5	1.4	3.5
Food	3.0	3.2	4.3	0.8	2.9
Tobacco	2.6	4.0	4.1	2.5	-2.3
Textiles	4.5	5.0	2.4	6.6	3.8
Apparel	2.4	2.0	3.0	3.4	1.7
Lumber	3.0	4.3	1.5	2.6	1.7
Furniture	1.8	2.1	2.0	2.8	-0.1
Paper	2.7	2.5	4.4	1.3	2.5
Printing & Publishing	1.2	2.4	1.4	0.0	-0.8
Chemicals	4.0	4.8	5.2	2.5	2.2
Petroleum	3.2	5.5	2.0	0.0	1.8
Rubber	2.2	2.5	2.3	-0.3	3.4
Leather	1.5	1.2	2.3	0.7	1.8
Stone,Clay & Glass	2.0	2.6	1.5	1.3	1.7
Primary Metals	1.0	1.5	1.5	-2.1	2.1
Fabricated Metals	1.8	2.1	1.7	0.6	2.4
Machinery, exc. Elec.	3.5	1.8	2.1	0.9	11.6
Electrical Machinery	4.3	4.5	3.5	4.3	4.6
Transportation Equipment	2.5	3.8	2.2	0.6	1.2
Instruments	3.5	3.8	3.2	2.9	3.6
Miscellaneous Manufactures	3.1	3.0	3.5	0.8	4.9
Nonfarm Nonmanufacturing	1.5	2.5	1.5	0.0	0.3
Mining	1.8	4.9	2.4	-6.9	1.7
Construction	-0.2	3.0	-3.7	-2.1	-2.1
Transportation	1.7	2.2	2.7	1.5	-0.4
Railroad	3.2	4.8	2.1	1.1	2.6
Nonrail	1.0	0.6	3.2	1.7	-0.8
Communications	5.4	6.6	4.7	4.3	4.1
Public Utilities	4.4	7.2	4.6	0.3	1.2
Trade	2.4	2.9	3.0	0.8	2.0
Finance & Insurance	0.9	1.4	1.3	-0.1	0.2
Real Estate	1.2	2.3	1.4	-0.2	-0.6
Services	0.9	1.0	1.9	0.2	0.1
Nonfinancial Corporate Business	1.8	2.6	1.5	0.4	1.4

Table III c.
Capital Productivity
(Output per Unit of Capital)
By Major Industries of the Economy
(Selected Periods, 1948 - 86)

	Average Annual Rates of Change				
	1948-86	1948-65	1965-73	1973-79	1979-86
Business Economy	0.4	1.2	0.0	-0.5	-0.3
Goods Producing Industries	0.3	1.3	-0.2	-1.3	0.3
Service Producing Industries	0.6	1.1	0.6	0.2	-0.5
Farming	0.7	-0.7	-0.2	0.5	5.7
Manufacturing	-0.1	0.6	-0.6	-1.8	0.2
Food	0.8	1.7	1.3	-1.9	0.4
Tobacco	-1.8	0.1	0.0	-2.1	-7.9
Textiles	2.1	3.3	0.1	2.4	1.3
Apparel	-0.2	0.3	-1.2	-1.0	0.2
Lumber	-0.8	-0.7	-1.4	-1.8	0.7
Furniture	-0.2	1.3	-1.6	-1.5	-1.1
Paper	-0.1	0.3	1.8	-2.9	-0.6
Printing & Publishing	-0.8	0.1	-2.0	-0.9	-1.7
Chemicals	1.3	2.6	2.0	-1.2	-0.5
Petroleum	-0.4	1.1	0.2	-2.0	-3.3
Rubber	0.1	0.5	-0.8	-2.8	2.5
Leather	-1.8	0.2	-2.5	-3.1	-4.5
Stone,Clay & Glass	-0.4	0.4	-0.5	-2.0	-1.1
Primary Metals	-2.7	-1.4	-2.1	-5.3	-4.4
Fabricated Metals	-1.3	-0.6	-1.2	-3.1	-1.5
Machinery, exc. Elec.	0.1	-1.0	-0.9	-1.4	5.6
Electrical Machinery	0.5	2.4	-1.6	0.2	-1.1
Transportation Equipment	-0.1	2.0	-2.3	-1.4	-1.4
Instruments	1.1	1.9	-0.5	2.2	0.0
Miscellaneous Manufactures	-0.4	-0.4	-0.2	-3.1	1.4
Nonfarm Nonmanufacturing	0.1	1.0	-0.3	-0.5	-1.0
Mining	-2.2	-2.1	1.3	-3.8	-5.0
Construction	-1.5	1.0	-6.5	-3.5	0.2
Transportation	1.5	1.8	2.8	1.6	-0.7
Railroad	0.7	1.6	1.1	1.8	-2.9
Nonrail	-0.2	0.2	0.4	-0.4	-1.3
Communications	0.3	0.4	1.4	0.2	-1.0
Public Utilities	1.9	3.5	1.8	-1.2	0.8
Trade	-0.5	0.5	-1.5	-1.5	-1.2
Finance & Insurance	-2.0	0.7	-2.7	-3.9	-5.7
Real Estate	0.7	1.8	0.2	1.6	-2.1
Services	-0.1	-1.1	0.6	0.7	0.8
Nonfinancial Corporate Business	0.6	1.4	0.5	-0.4	-0.5

Table III d.

Capital - Labor Ratio
By Major Industries of the Economy
(Selected Periods, 1948 - 86)

	Average Annual Rates of Change				
	1948-86	1948-65	1965-73	1973-79	1979-86
Business Economy	1.9	2.0	2.1	1.2	1.7
Goods Producing Industries	2.3	2.7	1.9	1.9	2.2
Service Producing Industries	1.3	1.3	2.0	0.6	1.2
Farming	4.2	5.4	4.8	2.6	2.2
Manufacturing	2.8	2.3	3.2	3.2	3.2
Food	2.1	1.4	2.9	2.8	2.4
Tobacco	4.5	3.9	4.1	4.7	6.1
Textiles	2.3	1.7	2.3	4.0	2.4
Apparel	2.6	1.6	4.3	4.5	1.5
Lumber	3.7	5.0	2.9	4.4	1.0
Furniture	2.0	0.8	3.6	4.3	1.0
Paper	2.8	2.3	2.5	4.3	3.2
Printing & Publishing	2.0	2.3	3.4	0.9	0.9
Chemicals	2.7	2.2	3.1	3.7	2.7
Petroleum	3.6	4.4	1.8	2.1	5.3
Rubber	2.1	2.0	3.1	2.6	0.9
Leather	3.3	1.1	4.9	3.9	6.6
Stone,Clay & Glass	2.4	2.2	1.9	3.3	2.8
Primary Metals	3.9	3.0	3.6	3.5	6.8
Fabricated Metals	3.2	2.8	3.0	3.8	3.9
Machinery, exc. Elec.	3.3	2.8	3.1	2.4	5.7
Electrical Machinery	3.7	2.0	5.2	4.1	5.9
Transportation Equipment	2.6	1.7	4.6	2.1	2.7
Instruments	2.4	1.9	3.8	0.7	3.6
Miscellaneous Manufactures	3.5	3.3	3.6	4.0	3.5
Nonfarm Nonmanufacturing	1.4	1.6	1.8	0.5	1.3
Mining	4.1	7.1	1.1	-3.3	7.1
Construction	1.3	2.0	3.0	1.5	-2.3
Transportation	0.2	0.4	-0.2	-0.1	0.3
Railroad	2.5	3.1	1.0	-0.6	5.6
Nonrail	1.2	0.4	2.7	2.1	0.6
Communications	5.0	6.2	3.2	4.0	5.1
Public Utilities	2.5	3.6	2.7	1.5	0.4
Trade	3.0	2.4	4.5	2.4	3.2
Finance & Insurance	2.9	0.7	4.2	4.0	6.3
Real Estate	0.5	0.5	1.2	-1.7	1.5
Services	1.0	2.1	1.3	-0.5	-0.7
Nonfinancial Corporate Business	1.2	1.2	1.0	0.8	1.9

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

1. Business Economy

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	3.2	1.0	2.8	1.5	1.7	2.2	0.4	1.9
1948 / 1965	3.6	0.4	2.4	0.9	2.7	3.2	1.2	2.0
1965 / 1973	3.6	1.4	3.6	2.1	1.5	2.1	0.0	2.1
1973 / 1979	2.5	1.9	3.1	2.2	0.3	0.6	-0.5	1.2
1979 / 1986	2.5	1.1	2.8	1.7	0.8	1.4	-0.3	1.7

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

1. Business Economy

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	38.3	81.2	45.2	69.5	55.1	47.2	84.8	55.6
1949	37.4	78.5	45.8	67.9	55.2	47.7	81.7	58.4
1950	41.0	79.3	47.1	68.8	59.5	51.7	87.0	59.4
1951	43.9	81.6	48.6	70.9	61.9	53.8	90.3	59.5
1952	45.3	81.7	49.6	71.3	63.6	55.4	91.4	60.7
1953	47.4	82.5	50.7	72.1	65.7	57.5	93.5	61.5
1954	46.5	79.7	51.6	70.6	65.9	58.4	90.1	64.8
1955	49.7	82.7	53.0	73.0	68.1	60.1	93.8	64.1
1956	51.1	83.9	54.4	74.3	68.9	60.9	94.1	64.8
1957	51.7	82.7	55.6	73.8	70.0	62.5	93.0	67.3
1958	50.7	78.8	56.5	71.5	71.0	64.4	89.8	71.7
1959	54.4	81.8	57.9	74.0	73.6	66.5	94.0	70.7
1960	55.4	81.9	59.1	74.5	74.4	67.6	93.8	72.1
1961	56.5	80.7	60.4	74.0	76.3	70.0	93.5	74.8
1962	59.4	81.9	61.9	75.4	78.8	72.5	95.9	75.6
1963	62.1	82.4	63.7	76.3	81.5	75.4	97.6	77.3
1964	65.9	83.7	65.6	77.8	84.7	78.7	100.5	78.3
1965	70.0	86.4	67.9	80.3	87.1	81.0	103.1	78.5
1966	73.6	88.5	70.5	82.6	89.2	83.2	104.5	79.7
1967	75.6	88.5	72.9	83.4	90.7	85.5	103.7	82.4
1968	78.9	89.9	75.4	85.2	92.7	87.8	104.6	83.9
1969	81.1	92.3	78.3	87.7	92.4	87.8	103.5	84.8
1970	80.3	90.8	80.8	87.5	91.8	88.4	99.4	88.9
1971	82.5	90.4	83.4	88.1	93.7	91.3	98.9	92.3
1972	87.7	93.2	86.3	91.0	96.4	94.1	101.6	92.6
1973	92.9	96.9	89.8	94.6	98.3	95.9	103.5	92.6
1974	91.3	97.3	93.0	95.8	95.2	93.9	98.2	95.6
1975	89.4	93.4	94.7	93.8	95.2	95.7	94.3	101.4
1976	94.5	96.1	97.1	96.5	98.0	98.3	97.4	101.0
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	105.8	104.9	103.5	104.4	101.3	100.8	102.2	98.7
1979	107.9	108.3	107.7	108.1	99.8	99.6	100.2	99.4
1980	106.7	107.5	111.3	108.7	98.1	99.3	95.9	103.5
1981	108.9	108.2	115.1	110.4	98.6	100.7	94.6	106.4
1982	105.5	105.2	117.8	109.3	96.5	100.3	89.6	112.0
1983	109.9	106.7	119.9	111.0	99.0	103.0	91.7	112.4
1984	119.2	112.9	124.1	116.5	102.3	105.6	96.0	109.9
1985	123.9	115.2	127.7	119.3	103.8	107.5	97.0	110.9
1986	128.0	116.9	130.9	121.4	105.4	109.5	97.8	112.0

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

2. Goods Producing Sector

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	2.6	-0.1	2.2	0.4	2.1	2.7	0.3	2.3
1948 / 1965	3.6	-0.4	2.3	0.2	3.4	4.0	1.3	2.7
1965 / 1973	2.3	0.6	2.5	1.0	1.3	1.7	-0.2	1.9
1973 / 1979	1.3	0.8	2.7	1.3	0.1	0.5	-1.3	1.9
1979 / 1986	1.6	-0.9	1.3	-0.3	1.8	2.5	0.3	2.2

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

2. Goods Producing Sector

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	45.1	104.5	50.4	89.2	50.6	43.2	89.5	48.3
1949	43.0	98.6	51.2	85.3	50.4	43.6	84.0	51.9
1950	48.3	100.5	52.9	87.2	55.4	48.0	91.2	52.7
1951	53.0	104.2	55.6	90.6	58.5	50.9	95.4	53.4
1952	54.7	103.7	57.1	90.7	60.3	52.8	95.8	55.1
1953	57.8	104.2	58.6	91.6	63.1	55.5	98.6	56.2
1954	55.9	97.6	59.6	87.2	64.2	57.3	93.9	61.1
1955	60.9	101.9	61.3	90.8	67.1	59.7	99.4	60.1
1956	62.5	102.5	63.0	91.7	68.2	61.0	99.2	61.5
1957	62.4	99.1	64.4	89.7	69.5	63.0	96.9	65.0
1958	59.4	91.6	65.1	84.6	70.2	64.9	91.3	71.1
1959	64.6	96.0	66.3	88.1	73.3	67.3	97.4	69.1
1960	65.2	94.7	67.2	87.4	74.6	68.9	97.0	71.0
1961	65.6	91.8	68.2	85.5	76.7	71.5	96.2	74.3
1962	69.5	93.7	69.4	87.3	79.6	74.2	100.1	74.1
1963	73.3	93.8	70.8	87.7	83.6	78.2	103.7	75.5
1964	77.2	94.4	72.3	88.6	87.1	81.7	106.8	76.5
1965	82.3	98.0	74.4	91.8	89.6	83.9	110.6	75.9
1966	86.1	101.1	77.2	94.8	90.8	85.1	111.5	76.3
1967	86.4	99.8	79.6	94.5	91.4	86.5	108.6	79.7
1968	89.1	100.6	81.5	95.6	93.2	88.6	109.4	81.0
1969	90.6	102.3	83.6	97.4	93.0	88.6	108.4	81.7
1970	86.8	97.2	85.2	94.0	92.3	89.3	101.9	87.7
1971	87.1	94.7	86.7	92.6	94.1	92.0	100.5	91.6
1972	92.4	98.4	88.3	95.7	96.5	93.9	104.6	89.8
1973	98.7	102.8	90.8	99.7	99.0	95.9	108.6	88.3
1974	94.5	101.5	93.9	99.5	94.9	93.1	100.6	92.5
1975	88.7	92.7	95.2	93.4	94.9	95.6	93.1	102.7
1976	94.6	95.9	97.5	96.3	98.2	98.6	97.0	101.6
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	105.2	105.2	103.2	104.6	100.6	100.0	102.0	98.1
1979	106.8	107.8	106.6	107.4	99.4	99.1	100.2	98.9
1980	103.0	103.9	109.3	105.2	97.9	99.1	94.2	105.2
1981	104.2	103.3	112.4	105.6	98.7	100.9	92.7	108.8
1982	98.7	95.8	113.6	100.4	98.3	103.0	86.9	118.6
1983	101.3	95.9	114.0	100.6	100.7	105.6	88.9	118.9
1984	112.4	102.1	116.0	105.6	106.4	110.1	96.9	113.7
1985	117.0	101.7	116.7	105.6	110.8	115.0	100.3	114.7
1986	118.9	101.3	116.6	105.2	113.0	117.4	102.0	115.2

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

3. Service Producing Sector

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	3.7	1.8	3.2	2.3	1.4	1.9	0.6	1.3
1948 / 1965	3.6	1.1	2.5	1.5	2.1	2.5	1.1	1.3
1965 / 1973	4.8	2.2	4.2	2.9	1.9	2.6	0.6	2.0
1973 / 1979	3.4	2.7	3.3	2.9	0.5	0.7	0.2	0.6
1979 / 1986	3.1	2.4	3.6	2.9	0.3	0.7	-0.5	1.2

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

3. Service Producing Sector

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	33.3	64.4	42.3	56.3	59.1	51.7	78.6	65.7
1949	33.3	63.9	42.9	56.2	59.3	52.1	77.6	67.1
1950	35.6	64.0	43.9	56.6	62.9	55.6	81.0	68.6
1951	37.1	65.4	44.8	57.8	64.2	56.8	82.8	68.5
1952	38.3	65.9	45.5	58.3	65.7	58.2	84.3	69.0
1953	39.7	66.8	46.4	59.2	67.0	59.4	85.6	69.4
1954	39.6	66.8	47.3	59.5	66.4	59.2	83.7	70.7
1955	41.4	68.8	48.5	61.2	67.7	60.2	85.5	70.5
1956	42.7	70.5	49.7	62.8	68.1	60.6	86.0	70.4
1957	43.8	70.8	50.8	63.3	69.1	61.8	86.2	71.8
1958	44.3	69.6	51.8	62.9	70.5	63.7	85.5	74.4
1959	46.9	71.6	53.3	64.7	72.5	65.5	88.0	74.4
1960	48.2	72.8	54.7	65.9	73.1	66.2	88.1	75.1
1961	49.7	72.7	56.1	66.4	74.9	68.5	88.6	77.2
1962	52.0	73.5	57.9	67.6	77.0	70.7	89.8	78.8
1963	53.8	74.2	59.8	68.8	78.3	72.5	90.0	80.5
1964	57.5	76.0	61.9	70.6	81.4	75.6	92.9	81.4
1965	60.9	78.0	64.3	72.8	83.7	78.1	94.7	82.4
1966	64.4	79.4	66.9	74.6	86.4	81.2	96.4	84.3
1967	67.6	80.3	69.3	76.1	88.9	84.2	97.6	86.3
1968	71.4	82.2	72.1	78.4	91.0	86.8	98.9	87.7
1969	74.0	85.1	75.4	81.4	90.9	87.0	98.2	88.6
1970	75.5	86.2	78.4	83.2	90.7	87.6	96.4	90.9
1971	79.1	87.3	81.6	85.2	92.9	90.6	96.9	93.5
1972	84.2	89.5	85.3	87.9	95.8	94.1	98.8	95.2
1973	88.7	92.7	89.2	91.3	97.1	95.7	99.4	96.3
1974	88.9	94.2	92.4	93.5	95.1	94.4	96.2	98.1
1975	89.9	93.9	94.5	94.1	95.5	95.8	95.2	100.6
1976	94.5	96.3	96.9	96.5	97.9	98.2	97.5	100.6
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	106.2	104.7	103.7	104.3	101.8	101.4	102.4	99.0
1979	108.7	108.7	108.2	108.5	100.1	100.0	100.4	99.6
1980	109.4	110.0	112.3	110.9	98.6	99.4	97.4	102.1
1981	112.4	111.7	116.6	113.6	99.0	100.7	96.4	104.4
1982	110.5	111.9	120.0	115.0	96.1	98.7	92.0	107.2
1983	116.3	114.5	123.1	117.8	98.8	101.6	94.5	107.5
1984	124.2	120.6	128.5	123.6	100.5	102.9	96.7	106.5
1985	129.0	124.9	133.8	128.3	100.5	103.2	96.4	107.1
1986	134.7	128.1	138.6	132.1	101.9	105.1	97.2	108.2

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

4. Nonfinancial Corporate Business

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	3.7	1.8	3.1	2.2	1.5	1.8	0.6	1.2
1948 / 1965	4.2	1.5	2.7	1.8	2.3	2.6	1.4	1.2
1965 / 1973	4.4	2.9	3.9	3.2	1.2	1.5	0.5	1.0
1973 / 1979	2.7	2.3	3.1	2.5	0.2	0.4	-0.4	0.8
1979 / 1986	2.5	1.1	3.0	1.6	0.9	1.4	-0.5	1.9

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

4. Nonfinancial Corporate Business

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	33.0	58.9	41.7	54.0	61.1	56.0	79.1	70.7
1949	31.4	55.4	42.4	51.7	60.8	56.7	74.2	76.4
1950	35.2	58.0	43.5	53.9	65.2	60.6	80.8	75.0
1951	38.3	61.7	44.8	56.9	67.3	62.0	85.5	72.5
1952	38.8	62.6	46.2	57.9	67.0	62.0	84.0	73.9
1953	41.0	64.3	47.5	59.5	68.9	63.8	86.4	73.8
1954	39.6	60.8	48.4	57.4	69.1	65.2	81.9	79.6
1955	44.0	63.7	49.9	59.9	73.4	69.0	88.1	78.3
1956	44.9	65.2	51.6	61.4	73.2	68.9	87.0	79.2
1957	45.3	64.5	53.0	61.3	73.9	70.3	85.5	82.3
1958	43.0	61.6	53.7	59.5	72.3	69.8	80.0	87.2
1959	47.3	65.3	55.1	62.5	75.7	72.5	86.0	84.3
1960	48.7	66.3	56.4	63.6	76.5	73.4	86.2	85.1
1961	49.7	65.7	57.7	63.6	78.2	75.7	86.2	87.8
1962	53.6	68.3	59.4	65.9	81.4	78.5	90.4	86.9
1963	57.2	69.8	61.1	67.5	84.8	81.9	93.6	87.5
1964	61.0	71.8	63.1	69.5	87.8	84.9	96.7	87.8
1965	65.9	75.9	65.8	73.2	90.0	86.8	100.2	86.7
1966	70.5	80.0	69.2	77.1	91.4	88.1	101.9	86.5
1967	72.2	81.1	72.2	78.8	91.6	88.9	99.9	89.0
1968	76.3	83.8	75.2	81.5	93.6	91.1	101.5	89.7
1969	79.4	87.3	78.3	84.9	93.5	91.0	101.4	89.7
1970	78.6	86.3	80.8	84.8	92.6	91.1	97.2	93.6
1971	80.7	86.2	83.3	85.4	94.5	93.6	96.8	96.7
1972	86.6	90.7	86.1	89.4	96.8	95.6	100.6	94.9
1973	93.1	95.4	89.4	93.8	99.2	97.5	104.1	93.7
1974	90.9	96.1	92.2	95.0	95.7	94.6	98.6	96.0
1975	88.2	91.2	93.8	91.9	96.0	96.7	94.0	102.9
1976	93.9	95.4	96.7	95.7	98.1	98.4	97.1	101.4
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	106.1	105.5	103.9	105.1	101.0	100.6	102.1	98.5
1979	109.1	109.3	107.5	108.8	100.3	99.8	101.5	98.3
1980	107.2	108.2	110.5	108.8	98.5	99.1	97.0	102.1
1981	108.9	109.3	114.1	110.6	98.5	99.6	95.4	104.4
1982	105.7	105.3	116.4	108.2	97.6	100.4	90.7	110.6
1983	110.6	106.9	119.1	110.1	100.5	103.5	92.9	111.4
1984	120.7	113.9	123.9	116.6	103.6	106.0	97.4	108.8
1985	126.1	116.5	128.2	119.6	105.4	108.2	98.4	110.0
1986	129.4	117.7	131.8	121.4	106.6	109.9	98.1	112.0

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

5. Farming

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	1.4	-3.4	0.7	-2.1	3.6	5.0	0.7	4.2
1948 / 1965	0.2	-4.2	1.0	-3.1	3.4	4.7	-0.7	5.4
1965 / 1973	0.7	-3.7	0.9	-2.0	2.8	4.6	-0.2	4.8
1973 / 1979	1.5	-1.5	1.0	-0.3	1.8	3.1	0.5	2.6
1979 / 1986	5.0	-2.7	-0.6	-1.6	6.7	7.9	5.7	2.2

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

5. Farming

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	87.4	309.2	76.7	206.9	42.3	28.3	114.1	24.8
1949	84.6	306.5	77.8	205.9	41.1	27.6	108.7	25.4
1950	90.4	283.6	80.0	194.0	46.6	31.9	113.0	28.2
1951	85.2	268.7	82.4	186.6	45.7	31.7	103.4	30.7
1952	87.3	255.5	83.2	179.6	48.6	34.1	104.9	32.5
1953	90.9	236.5	84.2	169.3	53.7	38.4	107.9	35.6
1954	93.2	229.7	84.9	165.9	56.2	40.6	109.7	37.0
1955	94.5	233.6	85.9	168.4	56.1	40.5	110.0	36.8
1956	92.1	222.4	86.0	162.2	56.8	41.4	107.1	38.7
1957	87.9	204.6	86.7	152.5	57.7	43.0	101.4	42.4
1958	90.7	189.7	87.1	144.3	62.8	47.8	104.1	45.9
1959	88.5	189.9	88.0	144.8	61.1	46.6	100.5	46.3
1960	93.2	183.2	88.2	141.0	66.1	50.9	105.7	48.1
1961	92.5	173.4	88.4	135.4	68.4	53.4	104.7	51.0
1962	91.8	168.1	88.9	132.5	69.3	54.6	103.3	52.9
1963	92.1	161.0	89.8	128.7	71.5	57.2	102.6	55.8
1964	88.7	152.3	90.0	123.7	71.7	58.3	98.5	59.1
1965	91.2	148.3	90.6	121.7	74.9	61.5	100.7	61.1
1966	83.0	134.4	91.2	113.8	72.9	61.8	91.0	67.9
1967	89.1	129.6	91.8	111.2	80.1	68.8	97.1	70.8
1968	84.9	126.8	92.2	109.8	77.3	67.0	92.1	72.7
1969	88.2	120.6	92.7	106.4	82.9	73.1	95.2	76.9
1970	92.9	113.7	93.5	103.4	89.9	81.7	99.4	82.2
1971	97.1	110.3	94.8	102.4	94.8	88.1	102.4	86.0
1972	97.4	111.4	95.8	103.4	94.2	87.4	101.7	85.9
1973	96.2	109.4	97.1	103.1	93.3	88.0	99.1	88.8
1974	96.0	109.3	98.5	103.8	92.5	87.8	97.4	90.2
1975	103.4	105.6	98.3	101.9	101.5	97.9	105.2	93.0
1976	99.4	100.9	99.0	100.0	99.4	98.5	100.4	98.1
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	98.4	101.8	101.2	101.4	97.0	96.6	97.2	99.4
1979	105.3	99.7	103.1	101.3	103.9	105.6	102.1	103.4
1980	105.6	97.2	103.4	100.3	105.4	108.7	102.2	106.4
1981	127.9	96.8	103.8	100.3	127.5	132.1	123.2	107.2
1982	131.6	93.9	103.3	98.6	133.4	140.1	127.4	109.9
1983	101.7	91.7	102.2	97.0	104.9	111.0	99.5	111.5
1984	116.2	90.5	101.8	96.2	120.8	128.4	114.2	112.5
1985	137.1	84.1	100.4	92.3	148.6	163.1	136.6	119.4
1986	148.4	82.3	98.8	90.7	163.7	180.3	150.2	120.0

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

6. Manufacturing Industry

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	3.3	0.5	3.4	1.2	2.1	2.7	-0.1	2.8
1948 / 1965	4.0	1.0	3.3	1.4	2.5	3.0	0.6	2.3
1965 / 1973	3.8	1.2	4.4	1.9	1.8	2.5	-0.6	3.2
1973 / 1979	1.9	0.5	3.8	1.3	0.6	1.4	-1.8	3.2
1979 / 1986	2.2	-1.2	2.0	-0.3	2.5	3.5	0.2	3.2

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

6. Manufacturing Industry

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	37.0	79.4	35.3	67.2	55.0	46.6	104.8	44.4
1949	35.1	72.4	35.5	62.3	56.4	48.5	98.7	49.1
1950	40.0	78.2	36.8	66.8	59.8	51.1	108.6	47.1
1951	44.7	84.2	39.7	71.9	62.2	53.1	112.6	47.2
1952	46.2	85.4	41.4	73.3	63.1	54.1	111.6	48.5
1953	49.6	89.8	42.9	76.9	64.5	55.3	115.5	47.8
1954	46.0	82.1	43.5	71.5	64.3	56.0	105.7	53.0
1955	50.8	86.6	45.1	75.3	67.5	58.7	112.5	52.1
1956	51.3	87.9	47.6	76.9	66.7	58.3	107.7	54.2
1957	51.5	86.5	49.1	76.4	67.5	59.6	104.9	56.8
1958	47.0	79.4	49.6	71.4	65.8	59.3	94.9	62.4
1959	52.4	84.6	50.7	75.5	69.4	61.9	103.4	59.9
1960	52.5	84.4	51.8	75.6	69.4	62.2	101.3	61.4
1961	52.6	82.3	53.0	74.5	70.7	64.0	99.2	64.5
1962	57.1	85.6	54.6	77.3	73.8	66.7	104.5	63.8
1963	61.6	86.5	56.1	78.4	78.6	71.2	109.8	64.9
1964	66.0	88.4	58.3	80.4	82.1	74.6	113.2	65.9
1965	71.7	93.6	61.4	85.0	84.3	76.6	116.8	65.6
1966	77.2	99.7	66.0	90.7	85.1	77.4	116.9	66.2
1967	77.0	99.5	70.0	91.7	84.0	77.4	110.0	70.3
1968	80.9	101.4	73.2	94.0	86.1	79.8	110.5	72.2
1969	83.2	103.0	76.6	96.1	86.6	80.8	108.6	74.4
1970	78.6	97.3	79.0	92.5	85.0	80.8	99.4	81.3
1971	79.9	93.7	80.8	90.3	88.5	85.3	98.8	86.3
1972	87.0	97.7	83.2	93.9	92.6	89.0	104.6	85.1
1973	96.3	103.1	86.7	98.8	97.5	93.4	111.1	84.1
1974	91.7	101.2	91.4	98.6	93.0	90.6	100.4	90.3
1975	84.9	91.4	93.4	91.9	92.3	92.9	90.9	102.2
1976	93.1	95.9	96.7	96.1	96.9	97.1	96.3	100.9
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	106.0	104.4	104.1	104.3	101.6	101.5	101.7	99.8
1979	108.1	106.5	108.3	107.0	101.0	101.4	99.8	101.6
1980	103.2	101.7	111.8	104.4	98.8	101.4	92.2	109.9
1981	104.8	101.1	115.3	104.9	100.0	103.6	90.9	114.1
1982	98.4	92.9	116.7	99.1	99.2	105.9	84.3	125.6
1983	104.7	93.5	117.6	99.8	104.9	112.0	89.1	125.8
1984	117.5	99.5	121.0	105.1	111.8	118.1	97.1	121.6
1985	122.5	98.7	122.7	105.0	116.7	124.2	99.8	124.4
1986	125.9	97.8	124.2	104.7	120.3	128.8	101.4	127.0

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

7. Nonfarm Nonmanufacturing Industry

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	3.3	1.8	3.2	2.2	1.1	1.5	0.1	1.4
1948 / 1965	3.7	1.1	2.7	1.5	2.1	2.5	1.0	1.6
1965 / 1973	3.7	2.1	4.0	2.7	0.9	1.5	-0.3	1.8
1973 / 1979	2.8	2.7	3.3	2.9	-0.2	0.0	-0.5	0.5
1979 / 1986	2.5	2.2	3.5	2.7	-0.2	0.3	-1.0	1.3

TABLE IV. BUSINESS ECONOMY AND MAJOR SECTORS

7. Nonfarm Nonmanufacturing Industry

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	37.3	65.5	41.8	57.5	64.9	57.0	89.3	63.8
1949	36.9	64.7	42.4	57.1	64.6	57.0	86.9	65.6
1950	39.8	65.0	43.6	57.7	69.0	61.3	91.4	67.0
1951	42.3	67.0	44.6	59.3	71.2	63.1	94.8	66.6
1952	43.6	67.5	45.4	60.0	72.7	64.6	96.0	67.3
1953	45.1	68.1	46.5	60.7	74.4	66.3	97.2	68.2
1954	45.3	67.8	47.5	60.8	74.4	66.8	95.3	70.1
1955	47.9	70.0	48.9	62.7	76.3	68.4	97.9	69.8
1956	49.8	72.1	50.2	64.6	77.1	69.0	99.2	69.6
1957	50.6	72.1	51.5	65.0	77.9	70.2	98.3	71.4
1958	51.0	70.5	52.6	64.2	79.3	72.3	96.9	74.6
1959	54.2	72.8	54.1	66.2	81.8	74.5	100.1	74.4
1960	55.4	73.5	55.5	67.2	82.4	75.3	99.7	75.5
1961	56.9	73.2	57.0	67.5	84.2	77.6	99.7	77.9
1962	59.3	74.1	58.8	68.7	86.3	80.1	100.9	79.3
1963	61.4	74.9	60.7	69.9	87.8	82.0	101.1	81.0
1964	65.1	76.7	62.8	71.8	90.7	84.9	103.6	81.9
1965	68.6	78.7	65.3	74.0	92.8	87.2	105.2	82.9
1966	71.9	80.1	67.8	75.8	94.9	89.8	106.1	84.6
1967	74.6	80.6	70.2	76.9	97.0	92.6	106.3	87.1
1968	77.9	82.2	72.9	78.9	98.8	94.9	106.9	88.8
1969	80.0	85.5	76.1	82.2	97.3	93.6	105.1	89.0
1970	80.6	86.3	78.9	83.7	96.3	93.4	102.2	91.4
1971	83.1	87.5	82.0	85.5	97.1	95.0	101.4	93.7
1972	87.7	89.9	85.4	88.3	99.3	97.5	102.7	94.9
1973	91.5	93.2	89.2	91.8	99.7	98.1	102.6	95.6
1974	91.0	94.6	92.3	93.8	97.0	96.1	98.5	97.6
1975	90.7	93.4	94.4	93.8	96.7	97.1	96.1	101.1
1976	95.0	95.9	96.9	96.2	98.7	99.0	98.0	101.0
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	106.0	105.4	103.8	104.8	101.1	100.5	102.1	98.5
1979	107.9	109.7	108.3	109.2	98.7	98.3	99.6	98.8
1980	108.1	110.8	112.5	111.4	97.0	97.6	96.0	101.6
1981	109.9	112.1	117.1	113.9	96.6	98.1	93.9	104.4
1982	107.5	111.5	120.6	114.7	93.7	96.4	89.1	108.2
1983	112.3	113.7	123.6	117.2	95.8	98.7	90.8	108.7
1984	119.9	120.5	128.8	123.4	97.2	99.6	93.1	106.9
1985	124.0	124.9	133.9	128.0	96.9	99.3	92.6	107.2
1986	128.2	127.9	138.2	131.5	97.5	100.2	92.7	108.1

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

1. Mining

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	1.3	-0.5	3.6	0.6	0.7	1.8	-2.2	4.1
1948 / 1965	2.5	-2.3	4.6	-0.7	3.1	4.9	-2.1	7.1
1965 / 1973	2.5	0.1	1.2	0.5	2.0	2.4	1.3	1.1
1973 / 1979	-0.4	7.0	3.5	5.9	-6.0	-6.9	-3.8	-3.3
1979 / 1986	-1.4	-3.0	3.9	-0.9	-0.5	1.7	-5.0	7.1

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

1. Mining

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	57.4	113.9	37.9	87.0	65.9	50.3	151.4	33.3
1949	52.1	98.3	39.2	77.5	67.2	53.0	132.8	39.9
1950	57.7	99.3	41.1	78.9	73.1	58.1	140.3	41.4
1951	64.0	103.5	43.1	82.3	77.8	61.9	148.4	41.7
1952	64.5	100.5	45.7	81.4	79.3	64.2	141.1	45.5
1953	66.8	97.6	48.6	80.5	83.0	68.5	137.6	49.8
1954	66.0	89.1	51.7	76.2	86.6	74.1	127.8	58.0
1955	72.9	93.8	55.2	80.6	90.5	77.7	132.1	58.8
1956	76.4	97.5	58.8	84.3	90.7	78.4	130.1	60.3
1957	76.2	96.6	62.1	84.9	89.8	78.9	122.9	64.2
1958	70.6	85.2	64.6	78.5	89.9	82.9	109.3	75.9
1959	74.5	86.5	67.3	80.4	92.7	86.1	110.8	77.7
1960	74.6	84.0	69.6	79.4	94.0	88.8	107.2	82.9
1961	75.8	79.9	72.1	77.3	98.1	94.8	105.1	90.3
1962	77.8	78.0	74.5	76.7	101.4	99.7	104.4	95.4
1963	81.0	76.1	76.5	76.0	106.7	106.4	105.9	100.5
1964	83.7	76.9	79.0	77.3	108.4	108.9	105.9	102.8
1965	86.7	76.7	81.5	77.9	111.3	113.0	106.3	106.2
1966	91.1	77.1	83.6	78.8	115.7	118.2	109.0	108.5
1967	95.3	74.5	85.1	77.4	123.0	127.9	111.9	114.2
1968	98.8	73.2	86.2	76.9	128.5	135.0	114.6	117.8
1969	102.2	75.2	87.4	78.6	130.0	135.9	116.9	116.3
1970	106.6	74.7	87.9	78.4	136.0	142.7	121.2	117.7
1971	104.9	72.8	88.2	77.1	136.0	144.2	118.9	121.3
1972	106.5	75.0	88.6	78.9	135.1	141.9	120.2	118.1
1973	105.7	77.5	89.6	80.9	130.6	136.3	118.0	115.5
1974	103.2	83.3	91.1	85.5	120.8	124.0	113.3	109.4
1975	99.5	89.1	93.4	90.3	110.2	111.7	106.6	104.8
1976	98.5	94.6	96.0	95.0	103.7	104.1	102.7	101.4
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	102.1	104.7	104.7	104.7	97.5	97.5	97.5	100.0
1979	103.0	116.2	109.9	114.4	90.1	88.7	93.7	94.6
1980	107.5	125.5	116.2	122.9	87.5	85.6	92.5	92.6
1981	110.8	140.4	125.4	136.2	81.3	78.9	88.3	89.3
1982	104.7	136.7	132.6	135.6	77.2	76.6	79.0	97.0
1983	99.4	114.6	136.6	120.8	82.3	86.8	72.7	119.3
1984	105.4	117.9	141.5	124.5	84.6	89.4	74.5	120.1
1985	103.5	113.1	144.7	122.0	84.8	91.5	71.5	128.0
1986	93.6	93.9	143.3	107.8	86.8	99.7	65.3	152.7

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

2. Contract Construction

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	1.7	1.9	3.2	2.0	-0.3	-0.2	-1.5	1.3
1948 / 1965	4.6	1.6	3.6	1.7	2.9	3.0	1.0	2.0
1965 / 1973	-1.6	2.2	5.2	2.4	-3.9	-3.7	-6.5	3.0
1973 / 1979	0.3	2.5	4.0	2.6	-2.2	-2.1	-3.5	1.5
1979 / 1986	-0.4	1.7	-0.6	1.5	-1.9	-2.1	0.2	-2.3

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

2. Contract Construction

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	54.5	65.4	31.5	62.1	87.8	83.4	173.0	48.2
1949	54.1	64.6	32.9	61.5	88.0	83.8	164.4	51.0
1950	60.6	67.4	36.0	64.3	94.3	90.0	168.3	53.5
1951	67.2	73.8	39.4	70.4	95.4	91.0	170.5	53.4
1952	70.2	75.4	42.1	72.1	97.4	93.1	167.0	55.8
1953	72.6	73.6	43.4	70.5	103.0	98.7	167.2	59.0
1954	75.6	72.2	44.8	69.4	108.9	104.6	168.7	62.0
1955	80.7	76.2	46.6	73.1	110.4	106.0	173.4	61.1
1956	86.4	81.2	47.7	77.8	111.1	106.4	181.4	58.7
1957	86.3	78.9	48.5	75.8	113.8	109.3	178.0	61.4
1958	89.4	75.7	48.6	72.8	122.7	118.1	184.0	64.2
1959	97.2	80.0	49.3	76.9	126.4	121.4	197.2	61.6
1960	98.8	78.1	49.5	75.2	131.5	126.5	199.7	63.3
1961	100.0	77.1	49.5	74.2	134.7	129.7	201.8	64.3
1962	104.5	78.6	49.8	75.6	138.2	133.0	210.0	63.3
1963	107.5	80.7	51.6	77.7	138.4	133.2	208.5	63.9
1964	112.6	82.9	54.3	79.9	140.9	135.8	207.5	65.5
1965	117.3	85.5	57.4	82.5	142.2	137.2	204.4	67.1
1966	117.8	87.9	60.4	84.9	138.7	134.0	194.9	68.8
1967	115.5	84.4	63.8	82.1	140.7	136.8	180.9	75.6
1968	115.2	83.5	66.7	81.5	141.4	138.0	172.8	79.9
1969	111.2	90.9	70.5	88.5	125.6	122.4	157.8	77.6
1970	101.7	89.3	73.6	87.4	116.4	114.0	138.2	82.5
1971	98.6	92.2	76.6	90.4	109.1	106.9	128.7	83.1
1972	101.0	96.5	80.0	94.6	106.8	104.6	126.2	82.9
1973	103.2	101.8	86.2	100.0	103.2	101.4	119.7	84.7
1974	98.3	101.1	92.0	100.0	98.3	97.3	106.8	91.0
1975	90.5	90.0	94.7	90.6	100.0	100.6	95.5	105.3
1976	95.8	92.6	96.6	93.1	102.9	103.4	99.2	104.3
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	107.0	111.6	105.6	110.7	96.7	95.9	101.4	94.6
1979	105.1	117.8	109.0	116.5	90.2	89.3	96.5	92.5
1980	97.9	114.1	110.1	113.4	86.3	85.8	89.0	96.4
1981	89.3	110.1	112.6	110.2	81.0	81.1	79.3	102.2
1982	85.4	102.2	109.3	102.8	83.0	83.5	78.1	107.0
1983	89.3	106.2	105.5	105.9	84.3	84.1	84.6	99.3
1984	96.4	119.3	104.3	117.3	82.2	80.9	92.5	87.4
1985	99.5	126.6	103.6	123.7	80.4	78.6	96.0	81.8
1986	101.9	132.9	104.2	129.3	78.8	76.7	97.8	78.4

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

3. Total Transportation

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	1.4	-0.3	-0.1	-0.3	1.6	1.7	1.5	0.2
1948 / 1965	0.9	-1.2	-0.8	-1.1	2.1	2.2	1.8	0.4
1965 / 1973	3.5	0.8	0.6	0.8	2.7	2.7	2.8	-0.2
1973 / 1979	2.7	1.1	1.0	1.1	1.5	1.5	1.6	-0.1
1979 / 1986	-0.9	-0.5	-0.2	-0.4	-0.5	-0.4	-0.7	0.3

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

3. Total Transportation

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	60.6	117.2	106.4	114.6	52.9	51.7	56.9	90.8
1949	52.8	106.9	105.6	106.5	49.6	49.4	49.9	98.8
1950	55.0	105.8	104.8	105.4	52.1	52.0	52.4	99.1
1951	59.6	110.2	105.2	108.9	54.7	54.1	56.7	95.5
1952	57.7	107.6	103.7	106.6	54.1	53.6	55.7	96.3
1953	57.3	106.9	103.0	105.9	54.1	53.6	55.6	96.4
1954	53.3	99.6	101.7	100.0	53.3	53.5	52.5	102.1
1955	57.9	102.1	100.4	101.6	57.0	56.7	57.7	98.3
1956	60.0	102.9	99.8	102.0	58.8	58.3	60.2	97.0
1957	59.4	100.3	99.2	99.9	59.5	59.3	59.9	98.9
1958	54.9	91.8	97.4	93.0	59.1	59.9	56.4	106.1
1959	57.6	94.3	96.4	94.7	60.9	61.1	59.8	102.2
1960	58.3	93.2	95.5	93.6	62.3	62.6	61.1	102.4
1961	57.9	90.6	94.3	91.3	63.4	63.9	61.4	104.1
1962	60.3	90.9	93.4	91.4	65.9	66.3	64.5	102.7
1963	63.5	90.7	92.8	91.1	69.7	70.0	68.4	102.3
1964	65.4	92.1	92.4	92.1	71.0	71.0	70.7	100.4
1965	70.9	94.9	92.4	94.3	75.2	74.7	76.7	97.4
1966	76.8	97.1	92.7	96.1	80.0	79.1	82.9	95.5
1967	76.3	90.6	93.2	91.1	83.8	84.2	81.9	102.9
1968	79.6	97.2	94.0	96.5	82.5	81.8	84.7	96.7
1969	82.5	99.1	94.9	98.1	84.1	83.3	87.0	95.8
1970	81.4	97.6	95.2	97.1	83.9	83.4	85.5	97.5
1971	81.1	95.5	95.4	95.5	84.9	84.9	84.9	99.9
1972	87.4	97.9	95.7	97.4	89.8	89.3	91.3	97.8
1973	93.1	101.0	97.2	100.1	93.0	92.2	95.9	96.2
1974	94.2	99.9	98.3	99.5	94.6	94.3	95.8	98.4
1975	87.6	94.4	98.6	95.4	91.8	92.7	88.8	104.4
1976	94.4	96.5	99.3	97.1	97.2	97.8	95.1	102.9
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	106.8	104.9	101.7	104.1	102.6	101.8	105.1	96.9
1979	109.0	108.1	103.4	107.0	101.9	100.9	105.4	95.7
1980	102.6	104.3	104.7	104.3	98.3	98.4	98.0	100.4
1981	96.3	103.7	105.3	104.0	92.6	92.9	91.4	101.6
1982	87.7	93.3	104.9	96.0	91.4	94.0	83.6	112.4
1983	90.1	96.0	104.5	97.9	92.0	93.9	86.2	108.8
1984	98.0	100.9	103.9	101.6	96.5	97.1	94.3	103.0
1985	99.0	103.4	103.1	103.3	95.9	95.8	96.1	99.7
1986	102.3	104.7	102.1	104.0	98.4	97.8	100.3	97.5

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

3a. Railroad Transportation

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	-1.0	-4.1	-1.7	-3.5	2.5	3.2	0.7	2.5
1948 / 1965	-0.0	-4.6	-1.6	-3.9	4.1	4.8	1.6	3.1
1965 / 1973	-0.8	-2.8	-1.8	-2.5	1.8	2.1	1.1	1.0
1973 / 1979	0.3	-0.8	-1.4	-1.0	1.3	1.1	1.8	-0.6
1979 / 1986	-4.8	-7.2	-2.0	-5.5	0.7	2.6	-2.9	5.6

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

3a. Railroad Transportation

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	108.0	299.6	164.2	261.1	41.4	36.0	65.8	54.8
1949	89.9	255.0	162.5	228.7	39.3	35.3	55.3	63.7
1950	96.3	242.0	160.3	218.8	44.0	39.8	60.0	66.3
1951	108.5	253.3	158.6	226.4	47.9	42.8	68.4	62.6
1952	103.9	242.2	156.9	218.0	47.7	42.9	66.2	64.8
1953	101.2	237.8	155.1	214.3	47.2	42.6	65.3	65.2
1954	90.8	210.8	152.2	194.2	46.7	43.1	59.6	72.2
1955	100.5	214.5	149.5	196.0	51.3	46.9	67.2	69.7
1956	102.6	210.6	147.4	192.7	53.3	48.7	69.6	70.0
1957	96.7	198.3	145.6	183.3	52.7	48.8	66.4	73.4
1958	84.8	168.5	142.5	161.2	52.6	50.3	59.5	84.6
1959	89.2	163.7	139.4	156.8	56.9	54.5	64.0	85.2
1960	87.9	155.8	136.7	150.4	58.5	56.4	64.3	87.7
1961	87.1	145.7	133.5	142.2	61.2	59.7	65.2	91.6
1962	90.7	143.0	130.8	139.5	65.0	63.4	69.3	91.5
1963	95.3	139.3	128.6	136.2	70.0	68.4	74.1	92.3
1964	100.0	138.3	126.4	134.9	74.1	72.3	79.1	91.4
1965	107.9	134.9	124.5	132.0	81.8	80.0	86.7	92.3
1966	115.8	132.8	122.4	129.9	89.1	87.1	94.6	92.1
1967	109.8	125.8	120.2	124.1	88.5	87.3	91.4	95.5
1968	108.8	122.2	117.9	120.9	90.0	89.0	92.3	96.4
1969	111.7	119.5	115.8	118.4	94.3	93.5	96.4	96.9
1970	107.0	116.7	113.5	115.7	92.5	91.8	94.3	97.2
1971	96.1	109.1	111.5	109.8	87.5	88.1	86.2	102.2
1972	97.0	106.6	109.1	107.4	90.4	91.0	88.9	102.4
1973	101.4	107.6	107.5	107.6	94.2	94.2	94.3	99.9
1974	103.9	108.3	106.1	107.7	96.5	95.9	97.9	97.9
1975	94.9	100.4	104.0	101.5	93.5	94.5	91.3	103.6
1976	100.1	99.4	101.9	100.1	100.0	100.8	98.3	102.5
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	103.0	99.4	99.5	99.4	103.6	103.6	103.5	100.1
1979	103.4	102.7	98.7	101.5	101.9	100.7	104.7	96.1
1980	101.1	96.1	97.2	96.4	104.8	105.2	104.0	101.2
1981	92.0	89.4	95.6	91.3	100.7	102.8	96.2	106.8
1982	70.7	76.0	93.5	81.3	86.9	92.9	75.6	122.9
1983	70.8	66.7	91.3	74.1	95.5	106.1	77.6	136.8
1984	74.8	68.0	89.4	74.4	100.5	110.1	83.7	131.5
1985	73.5	65.8	87.6	72.4	101.5	111.6	83.9	133.1
1986	73.2	60.9	85.7	68.4	107.0	120.1	85.4	140.6

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

3b. Nonrail Transportation

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	2.2	1.2	2.4	1.4	0.8	1.0	-0.2	1.2
1948 / 1965	1.4	0.9	1.3	0.9	0.5	0.6	0.2	0.4
1965 / 1973	5.1	1.9	4.7	2.4	2.7	3.2	0.4	2.7
1973 / 1979	3.3	1.6	3.7	2.0	1.3	1.7	-0.4	2.1
1979 / 1986	-0.0	0.7	1.3	0.8	-0.9	-0.8	-1.3	0.6

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

3b. Nonrail Transportation

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	47.7	73.8	48.4	68.9	69.3	64.6	98.7	65.5
1949	42.7	71.7	48.4	67.1	63.6	59.5	88.1	67.6
1950	43.8	73.4	48.9	68.6	63.8	59.6	89.4	66.7
1951	46.4	76.2	51.5	71.4	65.0	60.9	90.1	67.6
1952	45.2	75.6	50.1	70.7	63.9	59.7	90.1	66.3
1953	45.4	75.8	50.6	70.9	64.0	59.9	89.6	66.8
1954	43.2	73.2	50.8	68.8	62.8	59.0	84.9	69.4
1955	46.4	75.5	51.1	70.7	65.6	61.4	90.8	67.7
1956	48.4	77.3	51.9	72.3	67.0	62.7	93.4	67.1
1957	49.3	77.0	52.6	72.2	68.3	64.0	93.8	68.3
1958	46.8	73.6	52.1	69.3	67.6	63.7	90.0	70.7
1959	49.1	77.9	53.2	73.0	67.2	63.0	92.3	68.3
1960	50.3	78.4	54.0	73.6	68.4	64.2	93.1	68.9
1961	50.0	77.5	54.9	73.0	68.5	64.5	91.2	70.8
1962	52.0	78.6	55.8	74.0	70.2	66.2	93.2	71.0
1963	54.9	79.2	56.8	74.7	73.4	69.3	96.5	71.8
1964	56.0	81.1	58.2	76.5	73.2	69.0	96.2	71.7
1965	60.9	85.4	60.1	80.4	75.7	71.3	101.3	70.4
1966	66.3	88.6	62.9	83.5	79.4	74.8	105.4	71.0
1967	67.2	82.2	66.1	78.8	85.2	81.7	101.7	80.4
1968	71.7	91.3	70.0	87.0	82.4	78.5	102.4	76.7
1969	74.6	94.2	73.9	90.0	82.9	79.2	101.0	78.5
1970	74.5	93.1	76.9	89.8	83.0	80.0	96.9	82.6
1971	77.0	92.3	79.3	89.6	85.9	83.4	97.1	85.9
1972	84.8	95.8	82.3	93.0	91.2	88.6	103.1	85.9
1973	90.9	99.5	86.8	96.9	93.9	91.4	104.8	87.2
1974	91.5	97.9	90.4	96.3	95.0	93.5	101.3	92.3
1975	85.6	93.0	93.2	93.1	91.9	92.0	91.8	100.2
1976	92.9	95.8	96.6	96.0	96.7	96.9	96.1	100.8
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	107.9	106.2	103.9	105.7	102.1	101.6	103.8	97.8
1979	110.6	109.4	108.2	109.1	101.4	101.1	102.2	99.0
1980	103.0	106.2	112.1	107.4	95.9	96.9	91.8	105.6
1981	97.5	107.0	115.1	108.7	89.7	91.1	84.7	107.6
1982	92.4	97.4	116.4	101.3	91.2	94.8	79.3	119.5
1983	95.3	102.9	117.7	105.9	90.0	92.6	81.0	114.4
1984	104.3	108.7	118.6	110.7	94.2	95.9	87.9	109.1
1985	105.9	112.3	118.6	113.5	93.3	94.3	89.3	105.6
1986	110.3	115.1	118.6	115.7	95.3	95.8	93.0	103.0

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

4. Communications

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	6.4	1.0	6.0	2.5	3.8	5.4	0.3	5.0
1948 / 1965	6.6	0.0	6.2	1.0	5.6	6.6	0.4	6.2
1965 / 1973	8.2	3.4	6.7	4.7	3.4	4.7	1.4	3.2
1973 / 1979	6.2	1.9	5.9	3.7	2.4	4.3	0.2	4.0
1979 / 1986	4.0	-0.1	5.0	2.6	1.3	4.1	-1.0	5.1

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

4. Communications

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	14.6	75.8	17.4	52.8	27.6	19.2	84.0	22.9
1949	15.3	73.0	18.5	51.3	29.8	20.9	82.5	25.4
1950	16.2	70.1	19.7	49.7	32.6	23.1	82.1	28.1
1951	18.0	71.6	20.8	50.9	35.4	25.2	86.7	29.0
1952	19.1	73.1	22.0	52.1	36.6	26.1	86.6	30.2
1953	20.9	75.6	23.4	54.0	38.8	27.7	89.3	31.0
1954	21.5	74.4	24.7	53.6	40.1	28.9	86.9	33.2
1955	23.6	74.3	26.2	53.8	43.8	31.7	90.0	35.3
1956	25.0	76.4	28.3	55.6	44.9	32.7	88.2	37.1
1957	26.8	75.7	30.2	55.7	48.1	35.4	88.7	39.9
1958	27.8	71.1	31.6	53.0	52.4	39.1	87.8	44.5
1959	29.7	70.3	33.3	52.9	56.2	42.2	89.2	47.4
1960	31.5	71.0	35.5	54.2	58.1	44.3	88.8	49.9
1961	32.9	69.7	37.5	54.5	60.4	47.2	87.6	53.8
1962	35.3	70.1	39.9	55.8	63.2	50.3	88.5	56.8
1963	37.7	70.2	42.5	57.0	66.1	53.7	88.6	60.6
1964	40.0	72.4	45.1	59.4	67.4	55.2	88.6	62.3
1965	43.4	75.9	48.3	62.7	69.2	57.2	89.9	63.6
1966	47.4	79.8	51.6	66.3	71.5	59.4	91.8	64.7
1967	51.0	81.0	55.0	68.5	74.4	62.9	92.7	67.9
1968	54.8	82.7	58.5	71.0	77.2	66.2	93.7	70.7
1969	60.5	89.3	62.6	76.4	79.2	67.7	96.6	70.1
1970	66.2	94.0	67.2	81.0	81.7	70.4	98.4	71.6
1971	69.6	91.7	71.6	81.9	84.9	75.9	97.1	78.1
1972	76.1	96.4	75.8	86.4	88.0	78.9	100.4	78.6
1973	81.7	99.2	81.1	90.4	90.3	82.3	100.7	81.8
1974	85.6	100.5	86.4	93.7	91.4	85.2	99.1	86.0
1975	89.3	97.7	90.6	94.2	94.7	91.4	98.6	92.7
1976	94.0	96.9	94.6	95.8	98.1	97.0	99.4	97.6
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	109.4	105.3	106.7	105.9	103.3	103.9	102.6	101.3
1979	117.1	110.8	114.6	112.6	104.1	105.8	102.2	103.5
1980	126.8	115.0	121.6	118.1	107.3	110.3	104.3	105.8
1981	133.9	117.7	128.9	123.1	108.8	113.7	103.9	109.5
1982	138.4	119.1	135.1	126.8	109.2	116.2	102.5	113.5
1983	148.8	111.3	141.2	125.8	118.3	133.7	105.4	126.9
1984	150.2	114.2	147.7	130.4	115.2	131.5	101.7	129.3
1985	152.4	113.1	154.4	133.1	114.5	134.7	98.7	136.5
1986	154.0	109.8	161.5	134.9	114.2	140.2	95.3	147.1

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

5. Public Utilities

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	5.6	1.1	3.6	2.2	3.3	4.4	1.9	2.5
1948 / 1965	7.5	0.2	3.8	1.6	5.8	7.2	3.5	3.6
1965 / 1973	6.5	1.9	4.6	3.4	3.0	4.6	1.8	2.7
1973 / 1979	1.8	1.5	3.0	2.4	-0.6	0.3	-1.2	1.5
1979 / 1986	3.2	2.0	2.4	2.2	0.9	1.2	0.8	0.4

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

5. Public Utilities

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	16.4	82.4	32.2	53.7	30.6	19.9	51.1	39.1
1949	18.2	82.7	33.6	54.6	33.4	22.0	54.2	40.7
1950	19.8	82.9	35.4	55.5	35.7	23.9	56.1	42.7
1951	23.0	82.7	37.0	56.2	40.9	27.8	62.0	44.8
1952	24.7	82.3	38.7	56.8	43.4	30.0	63.8	47.0
1953	26.6	82.6	40.5	57.8	46.0	32.2	65.6	49.0
1954	29.2	82.3	42.2	58.5	50.0	35.5	69.3	51.3
1955	30.6	82.7	43.7	59.4	51.6	37.0	70.0	52.9
1956	33.0	82.2	45.6	60.1	55.0	40.2	72.4	55.5
1957	35.2	83.0	47.6	61.4	57.4	42.5	74.1	57.3
1958	36.8	82.5	49.4	62.1	59.2	44.5	74.4	59.9
1959	40.3	82.9	51.3	63.1	63.8	48.6	78.4	61.9
1960	43.2	83.2	53.0	64.3	67.3	52.0	81.6	63.7
1961	45.5	82.8	54.6	65.1	69.8	54.9	83.3	65.9
1962	47.8	82.4	56.0	65.9	72.5	57.9	85.3	67.9
1963	50.3	83.6	57.6	67.3	74.7	60.1	87.3	68.9
1964	53.7	83.6	59.2	68.2	78.7	64.3	90.8	70.8
1965	56.2	85.0	61.1	70.3	79.9	65.4	91.9	71.2
1966	59.7	86.7	63.4	72.1	82.8	68.8	94.1	73.1
1967	62.6	88.3	66.2	74.4	84.1	70.9	94.5	75.0
1968	68.6	89.4	69.3	76.7	89.4	76.7	99.0	77.5
1969	73.0	92.4	72.6	79.9	91.3	79.0	100.5	78.6
1970	74.9	95.1	76.1	83.1	90.1	78.8	98.5	80.0
1971	80.2	94.6	79.5	85.1	94.2	84.8	100.9	84.0
1972	82.6	96.8	83.5	88.4	93.4	85.3	99.0	86.2
1973	93.2	99.5	87.7	92.1	101.2	93.6	106.2	88.2
1974	95.7	100.2	91.9	95.0	100.8	95.6	104.2	91.8
1975	100.3	98.0	94.9	96.0	104.5	102.4	105.7	96.9
1976	99.3	98.2	97.0	97.4	101.9	101.1	102.4	98.7
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	102.3	105.5	102.7	103.7	98.7	97.0	99.6	97.4
1979	103.6	109.0	105.0	106.5	97.3	95.1	98.7	96.3
1980	106.4	111.8	107.6	109.1	97.5	95.2	98.9	96.2
1981	114.2	115.3	110.3	112.1	101.9	99.1	103.5	95.7
1982	114.5	117.6	112.3	114.3	100.2	97.4	102.0	95.5
1983	118.3	118.5	114.0	115.6	102.3	99.8	103.7	96.2
1984	129.1	121.5	116.4	118.3	109.2	106.3	110.9	95.9
1985	131.6	123.9	120.3	121.6	108.2	106.2	109.4	97.1
1986	129.3	125.1	123.9	124.3	104.0	103.3	104.3	99.0

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

6. Trade

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	3.7	1.2	4.3	1.6	2.0	2.4	-0.5	3.0
1948 / 1965	3.9	1.0	3.4	1.2	2.6	2.9	0.5	2.4
1965 / 1973	4.4	1.3	5.9	1.9	2.4	3.0	-1.5	4.5
1973 / 1979	2.7	1.8	4.3	2.2	0.4	0.8	-1.5	2.4
1979 / 1986	3.4	1.3	4.6	1.9	1.4	2.0	-1.2	3.2

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

6. Trade

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	33.8	72.2	30.6	65.1	51.9	46.8	110.2	42.4
1949	34.7	72.5	30.9	65.3	53.0	47.8	112.2	42.6
1950	38.0	72.8	33.2	66.1	57.5	52.2	114.3	45.7
1951	38.3	74.1	33.8	67.3	57.0	51.7	113.4	45.6
1952	39.5	74.0	34.1	67.3	58.8	53.4	116.0	46.1
1953	40.8	74.6	34.8	67.9	60.1	54.7	117.2	46.7
1954	41.1	74.9	35.5	68.3	60.2	54.9	115.8	47.4
1955	44.9	76.7	37.8	70.3	63.9	58.5	118.8	49.2
1956	46.2	78.4	38.7	71.8	64.4	59.0	119.4	49.4
1957	47.0	78.3	39.4	71.9	65.3	60.0	119.1	50.4
1958	46.9	77.4	39.9	71.3	65.8	60.6	117.7	51.5
1959	50.2	80.0	41.7	73.8	68.1	62.8	120.5	52.1
1960	51.2	81.0	43.1	74.8	68.4	63.2	118.7	53.3
1961	51.7	80.4	44.0	74.5	69.4	64.3	117.5	54.7
1962	55.1	80.9	45.8	75.2	73.2	68.1	120.3	56.5
1963	57.2	80.4	48.0	75.1	76.1	71.1	119.2	59.6
1964	60.7	82.8	50.5	77.5	78.2	73.2	120.2	60.9
1965	64.7	85.1	53.9	79.9	80.9	76.0	120.0	63.4
1966	68.1	85.4	58.0	80.9	84.2	79.8	117.5	67.9
1967	70.0	84.6	60.8	80.6	86.8	82.7	115.1	71.8
1968	74.0	84.0	64.4	80.7	91.7	88.1	115.0	76.7
1969	75.5	91.7	68.5	87.8	85.9	82.3	110.3	74.6
1970	76.7	88.2	71.8	85.4	89.8	87.0	106.9	81.4
1971	80.5	89.8	76.3	87.5	92.0	89.6	105.5	84.9
1972	86.6	92.3	80.3	90.3	95.8	93.7	107.8	87.0
1973	91.2	94.7	85.5	93.1	97.9	96.3	106.6	90.4
1974	88.9	94.4	89.9	93.7	94.9	94.2	98.9	95.2
1975	90.4	94.6	90.8	93.9	96.2	95.6	99.6	96.0
1976	94.8	97.0	95.1	96.7	98.1	97.8	99.7	98.0
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	104.8	103.6	106.1	104.1	100.7	101.2	98.8	102.4
1979	106.8	105.4	110.0	106.2	100.5	101.3	97.1	104.4
1980	104.4	104.4	112.4	105.8	98.7	100.0	92.9	107.7
1981	105.9	104.9	117.0	107.0	98.9	100.9	90.5	111.5
1982	105.7	103.2	119.1	105.9	99.8	102.4	88.8	115.4
1983	110.4	105.9	124.3	109.1	101.2	104.2	88.8	117.3
1984	120.8	111.3	134.4	115.3	104.8	108.5	89.9	120.7
1985	127.7	113.7	142.4	118.6	107.7	112.3	89.7	125.2
1986	134.5	115.3	150.3	121.2	111.0	116.7	89.5	130.4

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

7. Finance and Insurance

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	4.1	3.1	6.2	3.7	0.4	0.9	-2.0	2.9
1948 / 1965	4.2	2.7	3.4	2.9	1.3	1.4	0.7	0.7
1965 / 1973	4.6	3.3	7.6	4.0	0.6	1.3	-2.7	4.2
1973 / 1979	3.4	3.5	7.6	4.1	-0.7	-0.1	-3.9	4.0
1979 / 1986	3.9	3.6	10.2	4.9	-1.0	0.2	-5.7	6.3

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

7. Finance and Insurance

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	30.7	44.4	23.4	39.8	77.2	69.2	131.2	52.8
1949	31.6	44.9	23.4	40.2	78.6	70.3	135.0	52.1
1950	33.4	46.0	23.7	41.1	81.2	72.6	140.8	51.5
1951	35.6	47.3	23.9	42.1	84.6	75.3	148.9	50.6
1952	37.4	49.0	24.0	43.5	86.1	76.3	155.9	49.0
1953	39.2	50.6	24.4	44.8	87.6	77.5	160.7	48.2
1954	40.7	52.5	24.9	46.3	87.9	77.6	163.3	47.5
1955	43.7	54.6	25.9	48.2	90.7	80.0	168.7	47.4
1956	46.4	55.6	27.0	49.2	94.2	83.4	171.8	48.6
1957	48.5	56.5	27.9	50.1	96.7	85.8	173.6	49.4
1958	48.3	57.9	28.8	51.5	93.9	83.5	167.8	49.8
1959	49.8	59.8	30.3	53.3	93.4	83.2	164.5	50.6
1960	52.6	61.8	31.7	55.2	95.3	85.1	166.2	51.2
1961	54.1	63.1	32.8	56.5	95.8	85.8	164.8	52.1
1962	56.0	65.0	34.6	58.4	95.8	86.1	161.6	53.3
1963	57.4	66.2	36.0	59.8	96.1	86.8	159.4	54.5
1964	59.1	68.3	38.6	62.2	95.1	86.5	153.3	56.4
1965	61.5	70.2	41.6	64.4	95.4	87.7	147.9	59.3
1966	64.3	71.0	44.2	65.9	97.5	90.5	145.2	62.3
1967	67.4	73.2	47.2	68.4	98.6	92.2	142.8	64.5
1968	71.7	76.7	51.4	72.3	99.2	93.5	139.7	66.9
1969	76.7	80.9	55.6	76.7	99.9	94.8	137.8	68.8
1970	78.7	82.5	59.5	78.7	100.0	95.4	132.4	72.1
1971	79.8	84.5	63.9	81.1	98.4	94.5	125.0	75.5
1972	83.7	87.2	68.4	84.1	99.5	95.9	122.3	78.5
1973	88.4	90.8	74.6	88.1	100.4	97.4	118.5	82.2
1974	91.5	93.1	81.2	91.1	100.4	98.3	112.6	87.2
1975	92.7	94.9	87.2	93.6	99.0	97.7	106.3	91.9
1976	95.8	96.6	93.2	96.0	99.8	99.2	102.8	96.5
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	103.9	107.0	107.7	107.1	97.0	97.1	96.4	100.7
1979	108.0	111.4	115.7	112.1	96.4	97.0	93.3	103.9
1980	111.0	113.8	123.9	115.4	96.2	97.6	89.6	108.9
1981	114.7	117.9	132.7	120.4	95.3	97.2	86.4	112.5
1982	117.8	122.0	141.0	125.1	94.2	96.6	83.6	115.5
1983	121.2	124.7	151.3	129.1	93.9	97.2	80.1	121.3
1984	125.7	129.2	170.8	136.0	92.4	97.3	73.6	132.2
1985	131.6	134.5	196.8	144.8	90.9	97.9	66.9	146.3
1986	140.8	143.0	227.7	156.9	89.7	98.4	61.8	159.2

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

8. Real Estate

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	3.7	2.5	3.0	3.0	0.7	1.2	0.7	0.5
1948 / 1965	4.3	2.0	2.5	2.4	1.8	2.3	1.8	0.5
1965 / 1973	4.1	2.6	3.9	3.8	0.3	1.4	0.2	1.2
1973 / 1979	4.3	4.5	2.7	2.9	1.4	-0.2	1.6	-1.7
1979 / 1986	1.4	2.1	3.6	3.5	-2.0	-0.6	-2.1	1.5

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

8. Real Estate

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	30.4	53.5	45.2	45.8	66.4	56.9	67.3	84.5
1949	31.1	54.2	45.8	46.4	67.0	57.3	67.8	84.5
1950	32.7	54.8	46.7	47.3	69.1	59.6	69.9	85.3
1951	33.2	55.5	47.4	48.0	69.1	59.8	69.9	85.5
1952	34.5	56.5	48.1	48.7	70.9	61.1	71.7	85.2
1953	35.8	58.1	48.9	49.5	72.3	61.6	73.3	84.1
1954	36.9	60.0	49.8	50.5	73.0	61.5	74.2	82.9
1955	39.2	62.0	50.8	51.7	75.9	63.2	77.2	81.9
1956	40.4	62.8	51.8	52.7	76.8	64.4	78.0	82.5
1957	42.6	64.0	52.8	53.7	79.3	66.5	80.6	82.6
1958	44.1	65.5	54.1	55.0	80.2	67.2	81.4	82.5
1959	47.5	66.7	55.7	56.5	84.0	71.2	85.2	83.5
1960	48.9	67.0	57.2	57.9	84.6	73.1	85.6	85.4
1961	50.5	66.1	59.0	59.5	84.9	76.4	85.7	89.2
1962	53.3	67.4	61.1	61.6	86.6	79.1	87.2	90.7
1963	55.5	73.1	63.4	64.1	86.6	75.9	87.5	86.7
1964	57.9	74.2	65.7	66.3	87.3	78.0	88.1	88.5
1965	61.8	74.3	68.2	68.7	90.0	83.2	90.6	91.8
1966	63.6	72.0	70.7	70.8	89.9	88.4	90.1	98.1
1967	65.2	72.9	72.9	72.9	89.4	89.3	89.4	99.9
1968	68.2	72.7	75.5	75.3	90.6	93.9	90.4	103.9
1969	72.8	77.5	78.7	78.6	92.6	93.9	92.5	101.5
1970	73.1	79.0	81.6	81.4	89.8	92.5	89.6	103.3
1971	78.6	84.0	84.9	84.8	92.7	93.5	92.6	101.0
1972	81.7	88.4	88.8	88.8	92.0	92.4	92.0	100.5
1973	85.3	91.5	92.4	92.4	92.4	93.2	92.3	101.0
1974	87.0	92.5	94.7	94.5	92.0	94.0	91.9	102.3
1975	88.6	91.6	96.2	95.9	92.4	96.7	92.1	105.1
1976	94.4	93.8	97.8	97.5	96.8	100.6	96.6	104.2
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	106.9	110.9	102.8	103.4	103.3	96.4	104.0	92.7
1979	110.0	119.2	108.5	109.4	100.6	92.3	101.4	91.0
1980	105.6	120.9	113.8	114.4	92.2	87.3	92.8	94.2
1981	105.6	119.5	118.6	118.8	88.9	88.4	89.0	99.3
1982	101.6	111.6	123.4	122.7	82.8	91.0	82.3	110.5
1983	106.1	120.2	125.8	125.5	84.5	88.3	84.3	104.7
1984	110.6	134.6	130.9	131.3	84.3	82.2	84.5	97.2
1985	113.7	136.6	135.6	135.8	83.7	83.3	83.9	99.3
1986	121.3	137.4	138.7	138.8	87.4	88.3	87.5	100.9

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

9. Services

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	4.1	3.2	4.3	3.5	0.6	0.9	-0.1	1.0
1948 / 1965	3.3	2.4	4.5	2.9	0.4	1.0	-1.1	2.1
1965 / 1973	5.5	3.5	4.9	4.0	1.4	1.9	0.6	1.3
1973 / 1979	4.4	4.2	3.7	4.0	0.4	0.2	0.7	-0.5
1979 / 1986	4.3	4.2	3.5	4.0	0.3	0.1	0.8	-0.7

TABLE V. MAJOR NONFARM NONMANUFACTURING INDUSTRIES

9. Services

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	31.8	44.4	27.9	38.9	81.7	71.5	113.9	62.8
1949	32.4	45.2	28.7	39.7	81.8	71.8	113.0	63.6
1950	34.2	45.2	29.8	40.0	85.4	75.5	114.7	65.8
1951	35.9	46.1	31.0	40.9	87.8	78.0	115.9	67.3
1952	38.0	47.7	32.3	42.4	89.6	79.7	117.6	67.8
1953	39.8	49.2	33.8	43.9	90.7	80.9	117.7	68.7
1954	38.6	50.2	35.5	45.1	85.7	76.9	108.7	70.8
1955	36.4	52.5	37.4	47.2	77.1	69.3	97.2	71.3
1956	36.6	54.9	39.3	49.5	73.9	66.5	93.0	71.6
1957	37.4	56.2	41.2	50.9	73.5	66.5	90.8	73.2
1958	40.2	55.7	42.9	51.0	78.9	72.2	93.8	77.0
1959	41.7	57.3	44.8	52.6	79.2	72.8	93.0	78.3
1960	42.5	59.1	46.8	54.5	77.9	71.8	90.7	79.2
1961	46.2	60.1	49.0	56.0	82.5	76.8	94.2	81.6
1962	46.7	61.3	51.3	57.5	81.1	76.2	90.9	83.7
1963	47.4	63.6	53.8	59.9	79.1	74.5	88.2	84.5
1964	53.3	64.5	56.4	61.5	86.7	82.7	94.6	87.4
1965	55.6	66.1	59.1	63.5	87.5	84.1	94.0	89.5
1966	59.2	68.8	62.0	66.2	89.3	86.1	95.5	90.1
1967	66.3	73.5	64.9	70.3	94.3	90.2	102.1	88.3
1968	69.4	77.8	68.4	74.3	93.4	89.2	101.4	87.9
1969	71.1	73.2	72.0	72.8	97.6	97.0	98.7	98.3
1970	73.5	80.9	75.3	79.0	93.0	90.8	97.6	93.1
1971	77.9	81.9	78.6	80.8	96.4	95.0	99.0	96.0
1972	82.9	83.2	82.4	82.9	100.0	99.7	100.6	99.1
1973	85.2	87.3	86.6	87.1	97.9	97.6	98.5	99.1
1974	85.7	91.9	90.4	91.4	93.8	93.3	94.9	98.4
1975	87.3	92.1	93.4	92.5	94.4	94.9	93.5	101.4
1976	92.7	95.2	96.4	95.6	96.9	97.3	96.1	101.3
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	108.8	105.0	104.0	104.7	103.8	103.5	104.6	99.0
1979	110.5	111.7	107.7	110.4	100.1	98.9	102.6	96.4
1980	117.7	117.0	111.3	115.1	102.2	100.6	105.7	95.2
1981	125.7	120.1	115.1	118.5	106.1	104.6	109.2	95.8
1982	121.1	125.1	118.0	122.7	98.7	96.8	102.6	94.4
1983	131.0	128.1	121.8	126.2	104.0	102.3	107.6	95.1
1984	138.2	135.8	126.8	132.8	104.1	101.8	109.0	93.4
1985	142.7	143.8	131.6	139.7	102.2	99.3	108.4	91.6
1986	148.4	149.1	136.9	145.0	102.3	99.5	108.4	91.8

TABLE VI. MANUFACTURING INDUSTRIES

1. Food

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	2.5	-0.5	1.7	0.0	2.5	3.0	0.8	2.1
1948 / 1965	2.8	-0.4	1.1	-0.1	2.9	3.2	1.7	1.4
1965 / 1973	3.7	-0.6	2.3	0.1	3.6	4.3	1.3	2.9
1973 / 1979	0.8	0.0	2.8	0.7	0.1	0.8	-1.9	2.8
1979 / 1986	1.9	-1.0	1.5	-0.3	2.2	2.9	0.4	2.4

TABLE VI. MANUFACTURING INDUSTRIES

1. Food

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	47.6	112.5	62.2	98.7	48.2	42.3	76.6	55.3
1949	46.5	110.0	63.0	97.2	47.9	42.3	73.8	57.3
1950	49.7	110.1	64.3	97.7	50.9	45.1	77.4	58.3
1951	50.3	112.5	66.2	100.0	50.3	44.7	76.1	58.8
1952	53.2	112.2	66.4	99.8	53.3	47.4	80.1	59.2
1953	56.4	111.9	66.5	99.7	56.6	50.4	84.8	59.4
1954	55.7	110.1	66.5	98.4	56.6	50.6	83.7	60.4
1955	56.9	110.8	67.3	99.1	57.4	51.4	84.5	60.8
1956	59.5	111.2	68.0	99.6	59.7	53.5	87.5	61.1
1957	61.6	107.9	67.8	97.3	63.3	57.1	90.8	62.9
1958	62.1	106.1	67.8	95.9	64.7	58.5	91.5	63.9
1959	63.0	107.1	68.3	96.8	65.1	58.8	92.3	63.8
1960	64.3	107.0	68.6	96.8	66.4	60.1	93.7	64.2
1961	64.8	106.2	69.7	96.5	67.1	61.0	92.9	65.7
1962	67.5	105.6	71.2	96.5	70.0	64.0	94.9	67.4
1963	72.4	104.7	72.5	96.2	75.3	69.2	99.9	69.3
1964	73.2	104.5	73.9	96.4	76.0	70.1	99.2	70.7
1965	76.4	105.7	74.4	97.4	78.4	72.3	102.7	70.4
1966	80.7	106.3	76.7	98.5	81.9	75.8	105.2	72.1
1967	79.4	106.4	79.2	99.3	80.0	74.6	100.3	74.4
1968	81.1	105.8	81.0	99.3	81.6	76.6	100.1	76.6
1969	84.4	106.6	82.4	100.3	84.2	79.2	102.5	77.3
1970	85.6	105.3	84.1	99.7	85.8	81.3	101.7	[illegible].9
1971	88.7	103.3	86.2	98.8	89.8	85.9	103.0	[illegible].4
1972	94.3	102.8	88.0	98.9	95.3	91.8	107.2	[illegible].6
1973	101.9	101.0	89.4	97.9	104.0	100.9	114.0	88.5
1974	91.9	100.2	91.7	97.9	93.9	91.8	100.3	91.5
1975	94.1	97.3	9[illegible].7	96.6	97.4	96.7	99.4	97.3
1976	100.0	99.8	97.[illegible]	99.3	100.7	100.2	102.3	98.0
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	101.4	100.0	102.6	100.7	100.7	101.5	98.9	102.6
1979	107.2	101.0	105.3	102.2	104.9	106.1	101.8	104.2
1980	110.7	99.3	107.3	101.4	109.1	111.5	103.1	108.1
1981	113.6	97.2	109.6	100.5	113.0	116.9	103.6	112.8
1982	119.9	94.2	111.4	98.7	121.5	127.4	107.7	118.3
1983	121.0	92.4	111.8	97.6	124.1	131.0	108.2	121.0
1984	118.7	92.8	113.3	98.2	120.9	127.9	104.8	122.1
1985	122.8	93.1	114.9	98.8	124.2	131.9	106.9	123.4
1986	122.1	94.4	116.5	100.3	121.8	129.3	104.8	123.4

TABLE VI. MANUFACTURING INDUSTRIES

2. Tobacco

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	0.8	-1.8	2.7	0.4	0.4	2.6	-1.8	4.5
1948 / 1965	2.2	-1.7	2.2	-0.4	2.7	4.0	0.1	3.9
1965 / 1973	3.0	-1.1	3.0	0.9	2.0	4.1	-0.0	4.1
1973 / 1979	0.6	-1.9	2.7	0.8	-0.2	2.5	-2.1	4.7
1979 / 1986	-4.8	-2.6	3.4	1.4	-6.1	-2.3	-7.9	6.1

TABLE VI. MANUFACTURING INDUSTRIES

2. Tobacco

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	54.1	162.5	48.3	97.0	55.8	33.3	111.9	29.7
1949	58.0	151.9	47.1	91.5	63.4	38.2	123.2	31.0
1950	54.9	146.1	48.3	89.4	61.5	37.6	113.8	33.1
1951	66.2	149.1	52.6	92.8	71.4	44.4	125.8	35.3
1952	64.3	150.9	52.4	93.5	68.8	42.6	122.7	34.7
1953	59.2	147.2	52.4	91.7	64.6	40.2	113.1	35.6
1954	55.6	144.8	51.9	90.5	61.4	38.4	107.0	35.9
1955	59.1	147.6	54.0	92.7	63.8	40.0	109.4	36.6
1956	62.7	143.9	57.1	92.4	67.9	43.6	109.8	39.7
1957	65.2	138.8	56.3	89.7	72.7	47.0	115.8	40.6
1958	69.6	137.8	56.2	89.2	78.0	50.5	123.7	40.8
1959	73.9	137.2	58.3	89.9	82.2	53.8	126.6	42.5
1960	76.2	133.8	59.7	89.3	85.3	57.0	127.6	44.6
1961	79.3	131.6	62.0	89.8	88.3	60.2	127.8	47.1
1962	82.2	129.9	63.9	90.2	91.1	63.3	128.6	49.2
1963	82.8	126.6	65.8	90.0	92.0	65.4	125.8	52.0
1964	79.6	129.6	67.5	92.2	86.4	61.4	118.0	52.1
1965	78.9	121.8	69.8	90.4	87.2	64.8	113.0	57.3
1966	80.1	122.6	73.4	92.9	86.3	65.4	109.1	59.9
1967	82.9	123.6	76.1	94.9	87.4	67.0	108.9	61.6
1968	84.0	118.8	79.2	94.7	88.7	70.7	106.1	66.7
1969	85.6	115.0	81.5	94.6	90.5	74.4	104.9	70.9
1970	90.8	116.2	80.7	94.5	96.1	78.2	112.5	69.5
1971	92.9	108.5	82.1	92.4	100.6	85.6	113.2	75.7
1972	95.4	105.1	85.2	92.9	102.7	90.8	112.0	81.0
1973	99.6	111.5	88.4	97.4	102.3	89.3	112.7	79.3
1974	100.7	109.7	92.8	99.4	101.3	91.8	108.5	84.6
1975	104.3	107.5	93.8	99.1	105.2	97.0	111.2	87.2
1976	104.0	107.0	96.6	100.7	103.3	97.2	107.7	90.2
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	103.9	100.4	103.7	102.5	101.4	103.5	100.2	103.3
1979	103.1	99.3	103.8	102.1	101.0	103.9	99.4	104.5
1980	99.7	98.1	107.9	104.2	95.7	101.6	92.4	109.9
1981	103.3	101.8	115.5	110.3	93.7	101.5	89.4	113.5
1982	93.3	97.2	116.9	109.3	85.4	96.0	79.9	120.2
1983	93.5	94.7	122.9	112.0	83.4	98.8	76.0	129.9
1984	90.7	93.1	128.1	114.6	79.2	97.4	70.9	137.5
1985	76.2	88.8	129.6	113.8	66.9	85.8	58.8	146.0
1986	73.2	82.7	131.2	112.5	65.1	88.5	55.8	158.6

TABLE VI. MANUFACTURING INDUSTRIES

3. Textiles

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	2.9	-1.5	0.8	-1.0	4.0	4.5	2.1	2.3
1948 / 1965	3.2	-1.8	-0.1	-1.4	4.6	5.0	3.3	1.7
1965 / 1973	3.4	0.9	3.2	1.3	2.0	2.4	0.1	2.3
1973 / 1979	4.1	-2.3	1.6	-1.5	5.7	6.6	2.4	4.0
1979 / 1986	0.7	-2.9	-0.6	-2.3	3.2	3.8	1.3	2.4

TABLE VI. MANUFACTURING INDUSTRIES

3. Textiles

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	36.2	140.6	73.4	122.9	29.5	25.8	49.4	52.2
1949	33.1	121.0	74.9	109.5	30.2	27.4	44.3	61.9
1950	34.9	134.0	76.3	119.1	29.3	26.0	45.7	57.0
1951	36.6	129.3	78.4	116.5	31.4	28.3	46.7	60.6
1952	35.9	122.6	79.0	111.9	32.1	29.3	45.5	64.4
1953	35.2	121.9	78.3	111.2	31.7	28.9	45.0	64.2
1954	33.4	107.8	77.3	100.9	33.1	30.9	43.2	71.7
1955	37.1	113.5	77.1	104.9	35.3	32.7	48.1	68.0
1956	37.8	110.5	77.3	102.8	36.8	34.2	48.9	69.9
1957	36.9	103.0	75.9	97.1	38.0	35.8	48.6	73.7
1958	36.4	95.9	74.1	91.4	39.8	38.0	49.2	77.3
1959	39.7	102.8	73.0	96.0	41.4	38.7	54.4	71.0
1960	38.3	98.6	72.5	92.6	41.4	38.9	52.9	73.5
1961	39.0	96.1	71.7	90.5	43.1	40.6	54.4	74.7
1962	41.5	98.6	70.9	92.3	45.0	42.1	58.6	71.8
1963	52.7	96.5	70.2	90.5	58.2	54.6	75.0	72.8
1964	56.0	98.1	70.5	91.8	61.0	57.1	79.5	71.8
1965	61.4	103.8	71.8	96.5	63.6	59.2	85.6	69.1
1966	66.7	108.2	75.5	100.7	66.3	61.7	88.4	69.8
1967	64.8	105.5	77.6	99.1	65.4	61.4	83.5	73.5
1968	68.0	110.4	79.5	103.3	65.8	61.6	85.5	72.1
1969	69.6	110.0	81.8	103.6	67.2	63.3	85.1	74.3
1970	73.5	104.6	83.4	99.8	73.7	70.3	88.2	79.7
1971	76.2	104.7	85.6	100.4	75.9	72.7	89.0	81.7
1972	81.5	110.4	89.4	105.6	77.2	73.8	91.2	80.9
1973	80.1	111.7	92.5	107.3	74.6	71.7	86.6	82.8
1974	71.7	102.8	95.6	101.2	70.9	69.8	75.1	92.9
1975	67.4	92.4	96.5	93.3	72.2	72.9	69.8	104.4
1976	82.3	99.8	97.9	99.4	82.8	82.5	84.0	98.1
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	98.2	99.1	101.3	99.6	98.6	99.0	96.9	102.1
1979	101.8	96.9	101.8	97.9	104.0	105.1	100.1	105.1
1980	101.8	92.5	102.2	94.7	107.6	110.1	99.6	110.5
1981	100.0	88.4	102.5	91.6	109.2	113.1	97.5	115.9
1982	93.9	76.7	100.9	82.1	114.4	122.6	93.1	131.6
1983	105.4	81.3	100.5	85.6	123.1	129.7	104.9	123.7
1984	106.0	81.2	100.8	85.6	123.8	130.6	105.2	124.1
1985	99.9	76.0	99.6	81.4	122.7	131.3	100.2	131.0
1986	107.3	78.7	97.8	83.0	129.2	136.3	109.6	124.3

TABLE VI. MANUFACTURING INDUSTRIES

4. Apparel

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	2.2	-0.1	2.5	0.1	2.1	2.4	-0.2	2.6
1948 / 1965	2.8	0.8	2.5	0.9	1.9	2.0	0.3	1.6
1965 / 1973	3.6	0.5	4.9	0.9	2.7	3.0	-1.2	4.3
1973 / 1979	1.5	-1.8	2.6	-1.3	2.8	3.4	-1.0	4.5
1979 / 1986	-0.1	-1.8	-0.3	-1.6	1.5	1.7	0.2	1.5

TABLE VI. MANUFACTURING INDUSTRIES

4. Apparel

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	45.3	91.4	39.9	85.4	53.0	49.6	113.5	43.7
1949	45.1	89.3	39.6	83.5	53.9	50.5	113.7	44.4
1950	48.9	92.5	40.4	86.5	56.6	52.9	121.1	43.7
1951	51.8	91.7	43.8	86.3	60.0	56.4	118.2	47.7
1952	52.9	94.2	43.6	88.4	59.9	56.2	121.3	46.3
1953	53.5	96.2	43.6	90.2	59.4	55.6	122.7	45.4
1954	50.3	89.3	43.3	84.1	59.8	56.3	116.0	48.5
1955	54.0	94.3	44.7	88.6	60.9	57.2	120.8	47.4
1956	55.2	93.8	46.2	88.4	62.4	58.8	119.6	49.2
1957	54.5	92.1	46.2	87.0	62.6	59.1	117.9	50.1
1958	53.4	87.8	46.2	83.2	64.2	60.8	115.7	52.5
1959	56.9	94.5	47.5	89.2	63.7	60.2	119.7	50.2
1960	58.9	93.3	48.4	88.2	66.8	63.1	121.7	51.9
1961	57.8	91.5	49.4	86.7	66.7	63.2	117.0	54.0
1962	61.3	97.1	51.7	92.0	66.6	63.1	118.6	53.2
1963	63.9	98.1	55.0	93.1	68.6	65.1	116.1	56.1
1964	66.0	98.8	57.2	93.9	70.3	66.8	115.5	57.9
1965	72.5	104.8	60.3	99.6	72.8	69.2	120.2	57.5
1966	78.4	108.1	63.7	102.9	76.2	72.5	123.1	58.9
1967	76.7	106.3	67.0	101.6	75.5	72.2	114.4	63.1
1968	80.5	106.6	71.1	102.2	78.7	75.5	113.1	66.7
1969	80.5	106.6	74.8	102.6	78.4	75.5	107.6	70.1
1970	75.1	101.6	76.9	98.4	76.3	73.9	97.6	75.7
1971	76.0	101.3	79.9	98.6	77.1	75.0	95.1	78.9
1972	88.9	105.9	84.5	103.2	86.2	84.0	105.2	79.8
1973	96.0	109.4	88.2	106.7	90.0	87.7	108.8	80.6
1974	90.6	101.6	92.2	100.4	90.3	89.2	98.3	90.7
1975	89.8	92.9	93.3	93.0	96.6	96.6	96.2	100.4
1976	96.6	100.2	96.2	99.7	96.9	96.4	100.4	96.0
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	105.1	101.0	102.4	101.2	103.8	104.0	102.6	101.4
1979	105.2	98.2	103.0	98.8	106.4	107.1	102.2	104.8
1980	107.6	95.5	104.5	96.7	111.3	112.6	102.9	109.4
1981	108.6	94.5	106.3	96.0	113.1	115.0	102.2	112.5
1982	101.5	85.9	104.0	88.2	115.1	118.2	97.6	121.0
1983	106.2	89.8	104.8	91.7	115.8	118.3	101.4	116.7
1984	109.2	91.9	105.4	93.7	116.5	118.7	103.5	114.7
1985	105.0	87.1	102.7	89.1	117.9	120.6	102.2	118.0
1986	104.5	86.6	100.5	88.4	118.2	120.6	103.9	116.1

TABLE VI. MANUFACTURING INDUSTRIES

5. Lumber

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	2.4	-0.5	3.2	-0.0	2.4	3.0	-0.8	3.7
1948 / 1965	2.8	-1.4	3.5	-0.9	3.8	4.3	-0.7	5.0
1965 / 1973	3.0	1.5	4.4	1.9	1.0	1.5	-1.4	2.9
1973 / 1979	2.8	0.2	4.6	1.2	1.5	2.6	-1.8	4.4
1979 / 1986	0.4	-1.2	-0.2	-1.0	1.4	1.7	0.7	1.0

TABLE VI. MANUFACTURING INDUSTRIES

5. Lumber

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	46.3	120.0	32.7	100.3	46.2	38.6	141.7	27.3
1949	40.8	107.9	33.4	91.1	44.8	37.8	122.0	31.0
1950	43.6	116.1	35.9	98.0	44.5	37.6	121.3	31.0
1951	44.2	119.7	39.5	101.6	43.5	36.9	111.8	33.0
1952	43.7	114.5	41.1	98.0	44.6	38.2	106.4	35.9
1953	41.8	111.4	42.6	95.9	43.6	37.6	98.2	38.3
1954	40.5	103.1	43.5	89.7	45.1	39.3	93.1	42.2
1955	46.9	107.5	46.2	93.8	50.0	43.6	101.5	43.0
1956	46.9	104.5	48.6	92.0	51.0	44.9	96.5	46.5
1957	44.5	94.4	48.9	84.3	52.8	47.1	90.9	51.8
1958	41.3	90.2	49.3	81.1	50.9	45.7	83.6	54.7
1959	48.9	98.2	50.7	87.6	55.8	49.8	96.5	51.6
1960	45.8	92.7	52.5	83.6	54.7	49.3	87.2	56.6
1961	43.9	88.2	52.4	80.0	54.9	49.8	83.7	59.5
1962	44.1	89.2	53.5	81.0	54.5	49.5	82.5	60.0
1963	55.1	87.7	54.6	88.0	68.8	62.8	100.8	62.3
1964	66.7	90.9	56.1	82.8	80.5	73.4	118.8	61.8
1965	74.4	93.8	58.9	85.7	86.9	79.4	126.4	62.8
1966	73.0	95.0	62.3	87.3	83.7	76.9	117.2	65.6
1967	74.8	92.5	63.7	85.5	87.5	80.9	117.5	68.9
1968	77.7	92.0	65.7	85.5	90.8	84.4	118.3	71.4
1969	76.4	95.4	69.0	88.9	86.0	80.1	110.8	72.3
1970	77.8	89.9	71.4	85.4	91.2	86.5	109.0	79.4
1971	80.1	92.9	74.5	88.4	90.7	86.3	107.5	80.2
1972	91.0	101.4	78.9	95.8	94.9	89.7	115.4	77.8
1973	94.1	105.3	83.3	99.9	94.3	89.4	113.0	79.1
1974	92.9	97.2	90.0	95.4	97.5	95.7	103.3	92.6
1975	86.9	82.3	92.2	84.7	102.5	105.6	94.3	112.0
1976	96.4	94.2	95.5	94.5	102.0	102.3	100.9	101.3
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	102.1	104.5	105.0	104.7	97.6	97.7	97.3	100.5
1979	111.0	106.6	109.4	107.4	103.4	104.0	101.4	102.6
1980	108.0	95.5	112.1	99.7	108.4	113.1	96.3	117.4
1981	99.8	91.1	113.3	96.6	103.3	109.6	88.1	124.4
1982	84.8	80.6	111.1	88.1	96.2	105.2	76.3	137.9
1983	95.8	91.0	108.8	95.4	100.3	105.2	88.0	119.6
1984	107.8	95.8	109.1	99.1	108.8	112.5	98.8	113.9
1985	108.2	94.7	107.8	98.0	110.4	114.3	100.3	113.9
1986	114.2	97.8	107.5	100.2	114.0	116.8	106.2	110.0

TABLE VI. MANUFACTURING INDUSTRIES

6. Furniture

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	2.7	0.9	2.9	1.2	1.5	1.8	-0.2	2.0
1948 / 1965	3.2	1.1	1.9	1.2	2.0	2.1	1.3	0.8
1965 / 1973	4.0	2.0	5.7	2.4	1.6	2.0	-1.6	3.6
1973 / 1979	1.9	-0.9	3.4	-0.3	2.1	2.8	-1.5	4.3
1979 / 1986	0.7	0.8	1.8	1.0	-0.3	-0.1	-1.1	1.0

TABLE VI. MANUFACTURING INDUSTRIES

6. Furniture

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	41.8	77.4	41.2	72.0	58.1	54.0	101.6	53.1
1949	39.6	69.7	40.3	65.2	60.8	56.9	98.3	57.9
1950	48.1	82.0	41.2	75.9	63.4	58.7	116.8	50.2
1951	45.9	79.3	44.7	74.0	62.0	57.8	102.6	56.4
1952	50.8	79.7	45.5	74.5	68.2	63.7	111.5	57.1
1953	49.3	81.7	46.2	76.3	64.7	60.4	106.9	56.5
1954	47.3	74.5	45.0	70.0	67.6	63.5	105.2	60.4
1955	54.9	81.1	46.5	75.8	72.4	67.7	118.1	57.3
1956	55.3	82.2	48.5	77.0	71.8	67.3	114.1	59.0
1957	52.9	80.7	49.3	75.9	69.7	65.5	107.3	61.0
1958	48.1	77.0	48.4	72.6	66.3	62.5	99.4	62.9
1959	55.0	84.1	49.2	78.8	69.7	65.3	111.6	58.5
1960	54.1	82.7	49.9	77.6	69.7	65.4	108.5	60.3
1961	52.2	79.5	49.8	74.8	69.7	65.6	104.8	62.6
1962	56.3	83.8	50.9	78.7	71.5	67.1	110.5	60.8
1963	58.8	84.0	52.2	79.0	74.4	70.0	112.7	62.1
1964	63.9	87.9	53.5	82.6	77.3	72.6	119.3	60.9
1965	72.0	93.6	56.7	87.9	81.9	76.9	127.1	60.5
1966	76.2	99.2	61.8	93.4	81.6	76.8	123.4	62.3
1967	72.1	97.2	65.3	92.0	78.4	74.2	110.5	67.2
1968	77.6	99.9	68.1	94.8	81.9	77.7	114.1	68.1
1969	83.1	101.3	71.4	96.3	86.3	82.1	116.4	70.5
1970	71.5	93.9	75.8	90.9	78.6	76.1	94.4	80.7
1971	75.3	96.3	77.7	93.2	80.7	78.1	96.9	80.7
1972	91.4	105.2	82.6	101.4	90.1	86.9	110.7	78.5
1973	98.7	109.8	88.2	106.2	92.9	89.9	111.9	80.3
1974	90.4	104.4	93.9	102.6	88.1	86.6	96.3	90.0
1975	79.2	86.7	93.5	87.9	90.2	91.3	84.7	107.8
1976	91.9	93.0	96.1	93.5	98.3	98.9	95.6	103.4
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	112.5	105.9	104.8	105.7	106.4	106.2	107.3	99.0
1979	110.2	103.9	107.6	104.5	105.5	106.1	102.4	103.6
1980	104.3	96.5	110.2	98.8	105.6	108.0	94.6	114.2
1981	102.7	97.6	112.9	100.1	102.5	105.2	90.9	115.6
1982	97.2	89.1	111.7	92.8	104.8	109.2	87.0	125.4
1983	105.9	98.1	112.9	100.5	105.4	108.0	93.8	115.1
1984	120.1	106.7	116.1	108.3	111.0	112.6	103.4	108.8
1985	117.8	107.9	119.1	109.7	107.4	109.2	98.9	110.4
1986	115.8	109.9	122.1	112.0	103.5	105.3	94.9	111.1

TABLE VI. MANUFACTURING INDUSTRIES

7. Paper

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	3.7	1.0	3.8	1.7	2.0	2.7	-0.1	2.8
1948 / 196[illegible]	4.4	1.8	4.1	2.3	2.0	2.5	0.3	2.3
1965 / 1973	5.7	1.3	3.8	1.9	3.7	4.4	1.8	2.5
1973 / 1979	1.3	-0.1	4.2	1.1	0.1	1.3	-2.9	4.3
1979 / 1986	2.1	-0.5	2.7	0.6	1.5	2.5	-0.6	3.2

TABLE VI. MANUFACTURING INDUSTRIES

7. Paper

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	29.7	67.6	31.6	56.1	52.9	43.9	93.9	46.7
1949	29.7	63.6	32.7	53.9	55.1	46.6	90.6	51.4
1950	38.8	70.1	33.9	58.6	66.1	55.3	114.2	48.4
1951	41.4	73.5	36.0	61.6	67.2	56.3	115.1	48.9
1952	38.2	72.0	37.1	61.0	62.6	53.1	102.9	51.5
1953	40.4	76.3	38.6	64.3	62.8	52.9	104.7	50.5
1954	41.5	75.1	40.1	64.1	64.7	55.2	103.5	53.3
1955	45.7	79.1	42.1	67.5	67.8	57.8	108.7	53.2
1956	47.0	81.1	45.3	70.0	67.2	58.0	103.9	55.8
1957	43.5	80.7	47.8	70.6	61.5	53.9	90.9	59.3
1958	43.7	79.1	49.1	70.1	62.4	55.3	89.0	62.1
1959	49.5	83.7	50.5	73.6	67.2	59.1	98.0	60.4
1960	48.5	84.5	52.0	74.7	65.0	57.4	93.4	61.5
1961	51.1	85.2	53.5	75.6	67.6	60.0	95.5	62.8
1962	53.5	87.2	55.5	77.6	68.9	61.3	96.4	63.6
1963	54.5	87.9	57.1	78.6	69.3	62.0	95.4	64.9
1964	58.8	89.2	59.3	80.2	73.2	65.9	99.1	66.5
1965	61.8	91.8	62.9	83.2	74.2	67.3	98.2	68.5
1966	65.9	96.3	67.7	87.8	75.0	68.4	97.3	70.3
1967	63.2	96.9	71.3	89.5	70.7	65.2	88.7	73.5
1968	70.6	98.9	73.9	91.7	77.0	71.4	95.5	74.7
1969	76.9	101.9	76.8	94.7	81.3	75.5	100.2	75.4
1970	71.9	98.7	80.0	93.3	77.0	72.8	89.9	81.0
1971	75.5	96.1	81.5	91.9	82.2	78.6	92.6	84.8
1972	83.8	99.0	82.4	94.2	89.0	84.7	101.8	83.2
1973	96.2	101.4	84.7	96.6	99.5	94.8	113.5	83.5
1974	91.2	99.6	89.7	96.8	94.3	91.5	101.7	90.0
1975	77.4	89.6	92.5	90.4	85.6	86.4	83.7	103.2
1976	92.0	96.3	96.3	96.3	95.5	95.5	95.5	100.0
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	105.6	100.8	104.1	101.8	103.7	104.7	101.4	103.3
1979	103.7	101.0	108.7	103.3	100.4	102.7	95.4	107.6
1980	94.4	98.3	113.6	102.7	91.9	96.0	83.1	115.5
1981	94.1	97.9	116.2	103.2	91.2	96.1	81.0	118.6
1982	102.4	93.4	119.2	100.9	101.5	109.6	85.9	127.6
1983	110.2	94.4	121.3	102.2	107.8	116.7	90.8	128.4
1984	115.8	98.5	124.2	106.0	109.3	117.5	93.2	126.1
1985	117.3	98.1	127.5	106.6	110.0	119.6	92.0	129.9
1986	119.8	97.8	131.0	107.5	111.5	122.4	91.4	133.9

TABLE VI. MANUFACTURING INDUSTRIES

8. Printing & Publishing

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	2.8	1.6	3.7	1.9	0.9	1.2	-0.8	2.0
1948 / 1965	3.8	1.3	3.6	1.6	2.1	2.4	0.1	2.3
1965 / 1973	2.6	1.2	4.7	1.8	0.8	1.4	-2.0	3.4
1973 / 1979	1.9	1.9	2.8	2.1	-0.2	-0.0	-0.9	0.9
1979 / 1986	1.7	2.6	3.5	2.8	-1.0	-0.8	-1.7	0.9

TABLE VI. MANUFACTURING INDUSTRIES

8. Printing & Publishing

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	41.7	70.0	34.1	63.4	65.7	59.5	122.1	48.8
1949	43.6	69.0	35.7	62.8	69.5	63.3	122.3	51.7
1950	44.0	69.3	37.7	63.4	69.4	63.5	116.8	54.4
1951	45.0	70.7	40.3	65.0	69.3	63.7	111.7	57.0
1952	46.0	71.7	41.2	66.0	69.7	64.2	111.6	57.5
1953	48.0	73.9	41.9	67.9	70.7	65.0	114.5	56.7
1954	50.4	73.8	42.7	68.0	74.2	68.3	118.0	57.9
1955	53.6	76.1	44.3	70.2	76.5	70.5	121.2	58.2
1956	55.8	78.4	46.3	72.4	77.0	71.1	120.3	59.1
1957	56.6	78.6	47.5	72.7	77.8	72.0	119.0	60.5
1958	55.2	77.5	49.2	72.1	76.5	71.2	112.2	63.4
1959	59.2	79.6	50.7	74.1	79.9	74.4	116.8	63.7
1960	60.8	81.6	52.5	76.1	79.9	74.5	115.7	64.4
1961	61.6	81.5	54.6	76.3	80.6	75.5	112.7	67.0
1962	64.0	82.3	56.6	77.3	82.8	77.8	113.2	68.7
1963	69.4	82.8	58.3	78.0	89.0	83.8	119.1	70.4
1964	76.0	84.4	59.9	79.6	95.4	90.1	126.8	71.0
1965	78.1	87.7	62.7	82.8	94.3	89.1	124.6	71.5
1966	82.2	90.2	66.6	85.5	96.1	91.2	123.4	73.9
1967	83.6	91.9	70.5	87.6	95.4	90.9	118.7	76.6
1968	85.7	93.0	74.2	89.1	96.1	92.1	115.6	79.7
1969	90.3	95.6	77.4	91.9	98.3	94.4	116.6	81.0
1970	85.4	94.8	80.3	91.8	93.0	90.0	106.3	84.7
1971	86.0	92.6	83.5	90.7	94.8	92.9	103.0	90.2
1972	90.4	94.6	87.2	93.1	97.0	95.5	103.6	92.2
1973	96.2	96.8	90.5	95.5	100.7	99.4	106.3	93.5
1974	93.0	96.1	93.5	95.6	97.3	96.7	99.5	97.2
1975	92.8	93.5	94.9	93.8	98.9	99.2	97.8	101.5
1976	95.5	95.3	96.9	95.6	99.9	100.2	98.6	101.7
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	105.4	104.3	103.7	104.2	101.2	101.0	101.6	99.4
1979	107.4	108.4	107.0	108.1	99.4	99.1	100.4	98.7
1980	105.5	110.1	110.8	110.2	95.7	95.9	95.3	100.6
1981	109.6	111.2	114.4	111.9	98.0	98.6	95.8	102.9
1982	109.7	111.7	116.7	112.7	97.3	98.2	94.0	104.5
1983	114.0	116.1	120.3	117.0	97.4	98.1	94.7	103.6
1984	118.0	122.3	124.9	122.8	96.1	96.5	94.5	102.1
1985	121.7	126.4	130.1	127.2	95.7	96.3	93.6	102.9
1986	121.0	129.5	136.0	130.8	92.5	93.5	89.0	105.0

TABLE VI. MANUFACTURING INDUSTRIES

9. Chemicals

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	5.3	1.2	3.9	2.2	3.0	4.0	1.3	2.7
1948 / 1965	6.8	1.9	4.1	2.6	4.1	4.8	2.6	2.2
1965 / 1973	6.9	1.7	4.9	2.8	4.0	5.2	2.0	3.1
1973 / 1979	3.7	1.2	4.9	2.6	1.1	2.5	-1.2	3.7
1979 / 1986	1.0	-1.2	1.5	-0.0	1.0	2.2	-0.5	2.7

TABLE VI. MANUFACTURING INDUSTRIES

9. Chemicals

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	16.8	61.0	27.7	46.5	36.1	27.6	60.8	45.4
1949	16.5	57.1	28.4	44.7	36.9	28.9	58.0	49.8
1950	19.9	59.5	29.6	46.5	42.7	33.4	67.1	49.7
1951	21.2	65.7	32.0	51.1	41.5	32.3	66.3	48.7
1952	21.4	67.1	34.0	52.8	40.5	31.9	62.9	50.6
1953	22.9	70.8	35.6	55.6	41.2	32.4	64.5	50.2
1954	24.1	69.1	36.8	55.2	43.7	34.9	65.5	53.2
1955	27.8	71.3	37.9	56.9	48.9	39.0	73.4	53.1
1956	29.1	73.4	39.6	58.9	49.4	39.6	73.4	54.0
1957	30.3	74.4	41.1	60.1	50.4	40.8	73.8	55.2
1958	29.8	72.6	42.2	59.6	50.0	41.1	70.7	58.1
1959	34.9	74.9	43.1	61.3	56.9	46.6	81.1	57.5
1960	34.8	76.7	44.3	62.9	55.3	45.3	78.5	57.7
1961	36.4	76.8	46.1	63.8	57.1	47.4	79.0	60.1
1962	39.0	78.9	47.6	65.7	59.4	49.4	81.9	60.4
1963	43.8	80.1	49.2	67.0	65.3	54.6	88.9	61.4
1964	47.3	81.4	51.4	68.8	68.8	58.2	92.1	63.1
1965	51.7	84.7	55.2	72.4	71.4	61.1	93.7	65.2
1966	55.0	89.2	59.7	77.0	71.4	61.6	92.1	66.9
1967	56.6	92.3	63.3	80.4	70.4	61.4	89.5	68.5
1968	64.3	95.5	66.9	83.9	76.7	67.3	96.1	70.1
1969	66.9	98.2	70.6	87.1	76.8	68.2	94.7	72.0
1970	68.0	96.8	74.2	87.7	77.5	70.3	91.7	76.6
1971	72.1	93.6	76.8	86.9	83.0	77.0	93.8	82.1
1972	78.7	93.9	78.6	87.8	89.7	83.9	100.1	83.7
1973	88.2	96.6	80.6	90.2	97.8	91.3	109.4	83.5
1974	79.7	97.7	86.2	93.0	85.7	81.6	92.5	88.2
1975	77.7	92.5	90.0	91.5	84.9	84.0	86.3	97.3
1976	90.6	96.5	94.9	95.9	94.5	93.9	95.5	98.3
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	103.7	102.3	104.6	103.2	100.5	101.3	99.2	102.2
1979	109.5	103.6	107.3	105.1	104.2	105.7	102.1	103.6
1980	99.1	102.9	110.6	106.0	93.5	96.3	89.6	107.5
1981	105.8	102.7	113.7	107.1	98.8	103.0	93.0	110.7
1982	109.3	98.5	115.2	105.1	104.0	111.0	94.9	117.0
1983	118.0	96.5	115.8	104.2	113.2	122.3	101.9	120.1
1984	118.7	97.8	117.2	105.6	112.4	121.3	101.3	119.8
1985	111.6	97.6	117.6	105.6	105.7	114.4	94.9	120.5
1986	117.6	95.6	119.1	105.0	112.0	123.1	98.7	124.7

TABLE VI. MANUFACTURING INDUSTRIES

10. Petroleum

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	2.6	-0.6	3.0	1.8	0.8	3.2	-0.4	3.6
1948 / 1965	4.4	-1.1	3.2	1.5	2.9	5.5	1.1	4.4
1965 / 1973	2.8	0.8	2.6	2.0	0.8	2.0	0.2	1.8
1973 / 1979	1.9	1.9	4.0	3.4	-1.4	0.0	-2.0	2.1
1979 / 1986	-1.3	-3.1	2.1	0.9	-2.1	1.8	-3.3	5.3

TABLE VI. MANUFACTURING INDUSTRIES

10. Petroleum

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	34.5	107.3	39.3	57.3	60.3	32.2	87.9	36.6
1949	37.0	103.6	40.4	57.3	64.7	35.7	91.6	39.0
1950	40.0	103.1	41.7	58.1	68.8	38.8	95.9	40.4
1951	41.7	109.3	44.3	61.7	67.6	38.1	94.1	40.5
1952	42.0	110.1	46.6	63.7	66.0	38.2	90.2	42.3
1953	43.9	114.0	49.5	66.9	65.5	38.5	88.5	43.5
1954	43.8	112.5	52.1	68.6	63.8	38.9	83.9	46.4
1955	48.5	112.4	54.6	70.5	68.8	43.1	88.8	48.6
1956	49.9	112.0	57.4	72.6	68.7	44.6	86.9	51.3
1957	48.5	110.1	59.8	74.0	65.5	44.0	81.0	54.4
1958	49.5	106.5	61.0	74.0	66.8	46.5	81.1	57.3
1959	55.8	102.9	62.1	74.0	75.4	54.2	89.9	60.3
1960	57.4	101.3	62.7	73.9	77.7	56.7	91.6	61.9
1961	59.5	96.6	64.0	73.5	81.0	61.6	92.9	66.3
1962	64.1	94.3	65.3	73.6	87.1	68.0	98.2	69.2
1963	66.2	90.3	65.5	72.6	91.2	73.3	101.0	72.6
1964	67.8	88.1	65.8	72.1	94.1	77.1	103.1	74.8
1965	71.4	88.7	67.2	73.3	97.4	80.5	106.2	75.8
1966	72.8	90.1	69.0	74.9	97.2	80.8	105.5	76.5
1967	72.6	90.1	71.9	77.0	94.4	80.6	101.0	79.8
1968	74.7	91.0	75.0	79.3	94.2	82.1	99.6	82.4
1969	71.5	89.0	77.2	80.3	89.1	80.4	92.6	86.8
1970	82.4	93.9	79.7	83.3	98.9	87.8	103.4	84.9
1971	87.1	96.1	82.4	86.0	101.4	90.6	105.7	85.7
1972	84.6	96.3	82.4	86.0	98.3	87.8	102.6	85.6
1973	89.0	94.6	82.6	85.7	103.8	94.0	107.8	87.3
1974	86.8	95.3	88.6	90.4	96.0	91.0	97.9	93.0
1975	86.9	92.4	92.5	92.5	93.9	94.1	93.9	100.2
1976	93.3	96.3	96.6	96.5	96.6	96.8	96.6	100.3
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	100.8	104.6	101.2	101.9	98.9	96.3	99.5	96.8
1979	99.8	106.1	104.7	104.9	95.2	94.1	95.3	98.7
1980	92.4	95.7	108.7	105.1	87.9	96.6	85.0	113.6
1981	88.2	106.6	113.7	111.7	79.0	82.8	77.6	106.7
1982	84.2	102.6	120.6	115.7	72.7	82.1	69.8	117.6
1983	82.8	99.0	122.5	116.2	71.3	83.7	67.6	123.7
1984	86.5	95.2	124.3	116.6	74.2	90.8	69.6	130.5
1985	86.0	89.1	123.8	114.7	75.0	96.6	69.5	139.0
1986	91.2	85.3	120.8	111.4	81.9	106.9	75.6	141.5

TABLE VI. MANUFACTURING INDUSTRIES

11. Rubber

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	4.8	2.6	4.8	3.0	1.8	2.2	0.1	2.1
1948 / 1965	5.4	2.8	4.9	3.1	2.2	2.5	0.5	2.0
1965 / 1973	7.0	4.7	7.9	5.3	1.7	2.3	-0.8	3.1
1973 / 1979	1.6	1.9	4.5	2.4	-0.8	-0.3	-2.8	2.6
1979 / 1986	3.9	0.4	1.3	0.6	3.2	3.4	2.5	0.9

TABLE VI. MANUFACTURING INDUSTRIES

11. Rubber

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	23.4	41.9	20.3	37.1	63.1	55.9	115.6	48.4
1949	21.4	37.4	20.7	33.7	63.7	57.3	103.7	55.3
1950	24.2	43.6	21.6	38.7	62.5	55.4	112.3	49.4
1951	31.1	46.5	23.0	41.3	75.3	66.9	135.0	49.5
1952	31.4	47.2	24.3	42.1	74.7	66.6	129.4	51.5
1953	31.1	49.9	25.2	44.4	70.1	62.4	123.3	50.6
1954	28.0	44.8	26.4	40.7	68.8	62.5	106.0	58.9
1955	31.0	51.8	27.6	46.4	66.8	59.8	112.4	53.2
1956	30.6	50.9	29.3	46.1	66.4	60.1	104.5	57.5
1957	30.4	51.6	30.1	46.8	65.0	59.0	100.9	58.4
1958	29.5	46.2	30.8	42.7	68.9	63.8	95.5	66.8
1959	36.8	52.4	32.0	47.9	76.8	70.1	114.8	61.1
1960	36.9	51.7	34.0	47.8	77.3	71.4	108.7	65.7
1961	38.8	51.6	35.6	48.1	80.7	75.2	109.1	69.0
1962	44.6	57.0	38.1	52.9	84.3	78.1	116.8	66.9
1963	48.6	58.1	39.6	54.0	89.9	83.6	122.8	68.1
1964	52.7	61.5	42.0	57.2	92.1	85.7	125.4	68.4
1965	57.2	67.4	45.5	62.6	91.4	84.9	125.7	67.5
1966	62.2	72.8	50.2	67.9	91.6	85.4	123.8	69.0
1967	62.3	72.7	54.1	68.7	90.6	85.7	115.1	74.4
1968	70.6	79.3	59.3	75.1	94.1	89.0	119.1	74.8
1969	77.6	83.6	64.2	79.5	97.5	92.8	120.8	76.8
1970	69.1	79.6	68.4	77.2	89.5	86.9	101.0	86.0
1971	74.7	80.0	71.8	78.3	95.5	93.4	104.0	89.8
1972	85.3	88.6	77.0	86.1	99.1	96.3	110.8	86.9
1973	98.6	97.2	83.6	94.3	104.6	101.5	118.0	86.0
1974	91.5	95.8	89.4	94.4	96.9	95.5	102.4	93.3
1975	82.7	82.9	91.8	84.8	97.5	99.7	90.1	110.7
1976	86.0	89.4	95.7	90.7	94.8	96.3	89.9	107.1
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	106.8	105.8	105.3	105.7	101.1	101.0	101.5	99.5
1979	108.5	108.7	109.0	108.8	99.7	99.8	99.5	100.3
1980	102.5	100.0	110.6	102.2	100.3	102.5	92.6	110.7
1981	113.2	102.3	113.7	104.7	108.1	110.7	99.6	111.2
1982	104.7	94.8	112.8	98.6	106.1	110.4	92.8	118.9
1983	117.9	100.4	111.4	102.7	114.8	117.5	105.8	111.0
1984	131.8	111.5	114.1	112.1	117.6	118.1	115.5	102.3
1985	136.6	110.6	116.8	111.9	122.0	123.5	117.0	105.6
1986	141.4	112.0	119.4	113.6	124.5	126.2	118.4	106.6

TABLE VI. MANUFACTURING INDUSTRIES

12. Leather

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	-1.1	-2.6	0.7	-2.1	1.0	1.5	-1.8	3.3
1948 / 1965	0.4	-0.8	0.3	-0.7	1.1	1.2	0.2	1.1
1965 / 1973	-0.5	-2.7	2.1	-2.3	1.8	2.3	-2.5	4.9
1973 / 1979	-1.9	-2.7	1.2	-2.2	0.2	0.7	-3.1	3.9
1979 / 1986	-4.9	-6.5	-0.4	-5.4	0.6	1.8	-4.5	6.6

TABLE VI. MANUFACTURING INDUSTRIES

12. Leather

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	98.9	160.4	76.9	148.6	66.6	61.7	128.7	47.9
1949	87.9	149.5	76.6	139.5	63.0	58.8	114.8	51.2
1950	87.6	155.3	75.0	144.0	60.8	56.4	116.7	48.3
1951	94.0	146.6	77.6	137.3	68.5	64.1	121.1	52.9
1952	83.0	154.3	78.0	143.7	57.8	53.8	106.5	50.5
1953	88.1	153.6	75.7	142.8	61.7	57.3	116.4	49.3
1954	81.2	144.2	75.4	134.9	60.2	56.3	107.7	52.3
1955	85.3	152.9	76.6	142.3	59.9	55.8	111.2	50.1
1956	85.9	150.5	78.0	140.6	61.1	57.0	110.1	51.8
1957	84.2	146.0	77.5	136.8	61.5	57.6	108.5	53.1
1958	79.6	138.2	77.5	130.3	61.1	57.6	102.7	56.1
1959	97.4	147.9	76.0	138.1	70.5	65.8	128.2	51.4
1960	87.7	140.5	76.8	131.7	66.6	62.4	114.2	54.7
1961	88.6	140.1	77.7	131.5	67.4	63.2	114.0	55.4
1962	96.0	141.7	78.3	132.9	72.3	67.8	122.6	55.3
1963	97.3	138.2	79.0	130.0	74.9	70.4	123.2	57.2
1964	100.2	136.7	79.5	128.8	77.8	73.3	126.1	58.1
1965	106.1	140.2	80.4	131.9	80.5	75.7	132.1	57.3
1966	111.8	146.1	83.8	137.5	81.3	76.5	133.3	57.4
1967	100.7	139.5	85.0	131.8	76.4	72.2	118.5	60.9
1968	105.2	141.5	90.9	134.3	78.3	74.4	115.8	64.2
1969	100.6	132.5	91.3	126.6	79.5	75.9	110.2	68.9
1970	91.4	124.1	90.8	119.3	76.7	73.7	100.7	73.2
1971	91.5	118.3	93.4	114.7	79.8	77.4	97.9	79.0
1972	94.4	118.7	94.3	115.2	81.9	79.5	100.1	79.4
1973	102.1	112.3	94.7	109.8	93.0	90.9	107.8	84.3
1974	98.3	104.2	98.2	103.3	95.1	94.3	100.1	94.3
1975	94.0	96.0	97.8	96.3	97.6	97.9	96.1	101.8
1976	105.0	102.7	98.9	102.2	102.8	102.3	106.2	96.3
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	104.0	102.0	100.3	101.6	102.3	102.0	103.7	98.3
1979	90.8	95.5	101.6	96.3	94.3	95.1	89.4	106.4
1980	91.6	89.2	103.9	91.2	100.5	102.7	88.2	116.5
1981	93.2	91.8	104.5	93.5	99.6	101.5	89.1	113.9
1982	86.3	83.0	102.4	85.7	100.6	103.9	84.2	123.3
1983	80.6	79.2	103.6	82.7	97.5	101.7	77.8	130.7
1984	80.4	73.1	104.2	77.5	103.6	109.9	77.1	142.4
1985	78.8	65.5	102.7	70.8	111.3	120.3	76.7	156.8
1986	64.1	59.5	98.9	65.1	98.5	107.8	64.8	166.4

TABLE VI. MANUFACTURING INDUSTRIES

13. Stone, Clay, & Glass

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	2.2	0.3	2.7	0.8	1.4	2.0	-0.4	2.4
1948 / 1965	3.5	0.9	3.1	1.3	2.2	2.6	0.4	2.2
1965 / 1973	3.1	1.6	3.6	2.1	1.0	1.5	-0.5	1.9
1973 / 1979	1.0	-0.3	3.0	0.5	0.5	1.3	-2.0	3.3
1979 / 1986	-0.7	-2.4	0.4	-1.6	0.9	1.7	-1.1	2.8

TABLE VI. MANUFACTURING INDUSTRIES

13. Stone, Clay, & Glass

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	45.2	82.1	40.4	70.2	64.3	55.0	111.9	49.1
1949	42.0	75.4	40.0	65.2	64.4	55.7	104.9	53.1
1950	50.8	82.1	40.9	70.3	72.3	61.9	124.2	49.8
1951	54.4	88.5	43.0	75.5	72.1	61.5	126.7	48.6
1952	52.3	84.4	43.9	72.7	71.9	62.0	119.2	52.0
1953	55.2	86.5	44.7	74.5	74.1	63.9	123.7	51.6
1954	53.9	82.1	44.8	71.3	75.6	65.7	120.5	54.5
1955	62.1	88.5	47.1	76.6	81.0	70.1	131.8	53.2
1956	61.0	90.4	51.3	79.1	77.2	67.5	119.0	56.7
1957	59.3	87.8	53.9	77.9	76.1	67.5	110.0	61.4
1958	57.8	82.6	54.7	74.3	77.8	70.0	105.7	66.2
1959	65.6	90.5	56.5	80.5	81.5	72.5	116.1	62.4
1960	64.0	89.5	58.3	80.4	79.6	71.5	109.9	65.1
1961	64.5	86.5	59.9	78.9	81.7	74.6	107.6	69.3
1962	67.7	88.0	61.5	80.5	84.1	77.0	110.1	69.9
1963	73.6	89.8	62.7	82.1	89.7	82.0	117.5	69.8
1964	78.5	92.9	64.7	84.9	92.4	84.5	121.2	69.7
1965	81.3	95.5	67.9	87.8	92.7	85.2	119.9	71.0
1966	81.9	98.0	72.2	90.9	90.1	83.5	113.4	73.6
1967	79.5	95.2	73.6	89.5	88.9	83.5	108.0	77.3
1968	82.6	96.8	75.7	91.3	90.5	85.3	109.1	78.1
1969	87.3	99.5	78.8	94.2	92.7	87.7	110.8	79.2
1970	83.7	96.4	81.3	92.5	90.5	86.8	102.9	84.4
1971	85.1	97.7	83.2	94.0	90.5	87.1	102.3	85.1
1972	93.4	103.3	86.1	98.9	94.5	90.4	108.5	83.4
1973	103.8	108.5	90.0	103.8	100.0	95.6	115.3	82.9
1974	97.5	106.2	94.3	103.2	94.5	91.7	103.3	88.8
1975	88.2	92.8	95.6	93.5	94.3	95.0	92.2	103.0
1976	98.4	96.0	98.0	96.5	101.9	102.5	100.3	102.1
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	109.6	105.1	104.4	104.9	104.5	104.4	105.0	99.3
1979	110.3	106.8	107.7	107.0	103.1	103.3	102.4	100.9
1980	99.6	98.4	111.2	101.7	98.0	101.2	89.6	113.0
1981	93.5	93.6	113.1	98.6	94.8	99.9	82.6	120.9
1982	85.9	83.9	112.7	91.4	94.0	102.3	76.2	134.3
1983	93.1	86.3	111.4	92.8	100.3	107.8	83.5	129.1
1984	102.1	91.6	111.7	96.8	105.5	111.5	91.4	122.0
1985	104.8	90.0	111.6	95.6	109.6	116.4	93.9	124.0
1986	104.8	90.4	110.9	95.6	109.6	116.0	94.5	122.7

TABLE VI. MANUFACTURING INDUSTRIES

14. Primary Metals

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	-0.2	-1.2	2.7	-0.3	0.2	1.0	-2.7	3.9
1948 / 1965	1.9	0.3	3.3	0.8	1.0	1.5	-1.4	3.0
1965 / 1973	1.6	0.1	3.8	0.9	0.7	1.5	-2.1	3.6
1973 / 1979	-2.5	-0.4	3.0	0.3	-2.8	-2.1	-5.3	3.5
1979 / 1986	-4.9	-6.8	-0.5	-5.1	0.2	2.1	-4.4	6.8

TABLE VI. MANUFACTURING INDUSTRIES

14. Primary Metals

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	80.8	102.1	37.1	83.7	96.5	79.1	217.7	36.3
1949	71.9	86.2	36.6	72.3	99.6	83.5	196.5	42.5
1950	85.4	99.9	37.2	82.2	103.9	85.5	229.4	37.3
1951	102.2	111.0	40.7	91.1	112.3	92.1	251.4	36.6
1952	91.2	102.2	43.5	85.7	106.4	89.3	209.7	42.6
1953	104.9	111.0	45.2	92.5	113.5	94.5	232.2	40.7
1954	81.7	93.1	45.1	79.8	102.4	87.8	181.3	48.4
1955	100.4	106.6	46.3	89.8	111.9	94.2	216.7	43.5
1956	99.2	108.7	49.4	92.1	107.7	91.3	201.0	45.4
1957	100.3	105.4	52.2	90.7	110.6	95.1	192.1	49.5
1958	76.0	87.3	53.0	78.2	97.2	87.1	143.4	60.7
1959	84.1	93.8	53.4	82.9	101.4	89.6	157.4	56.9
1960	82.5	94.7	55.8	84.3	97.8	87.1	147.9	58.9
1961	78.8	89.0	57.4	80.8	97.5	88.5	137.2	64.5
1962	83.9	91.8	58.2	83.0	101.1	91.4	144.1	63.4
1963	90.3	94.4	59.6	85.3	106.0	95.7	151.6	63.1
1964	102.0	101.5	61.8	91.0	112.2	100.5	165.1	60.9
1965	110.5	108.1	64.8	96.6	114.4	102.2	170.5	59.9
1966	117.9	111.9	69.7	100.8	117.0	105.4	169.2	62.3
1967	110.7	107.5	73.9	99.0	111.8	103.0	149.8	68.7
1968	110.1	108.5	77.0	100.7	109.3	101.5	142.9	71.0
1969	111.3	112.2	80.0	104.3	106.7	99.2	139.1	71.3
1970	101.5	105.2	83.2	99.8	101.7	96.5	122.0	79.1
1971	98.8	97.1	84.6	94.0	105.1	101.8	116.9	87.1
1972	105.6	100.0	86.3	96.6	109.3	105.6	122.4	86.3
1973	125.4	109.3	87.1	103.9	120.8	114.7	144.0	79.7
1974	127.5	110.5	91.0	105.7	120.6	115.3	140.0	82.4
1975	95.5	94.1	95.2	94.4	101.2	101.4	100.3	101.1
1976	99.8	96.7	98.3	97.1	102.9	103.3	101.6	101.7
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	109.5	104.4	102.1	103.8	105.4	104.9	107.2	97.8
1979	107.9	106.6	104.2	106.0	101.8	101.2	103.6	97.7
1980	100.6	93.9	105.3	96.7	104.0	107.1	95.5	112.2
1981	104.5	93.0	106.9	96.4	108.3	112.3	97.7	115.0
1982	76.5	73.5	105.3	81.3	94.1	104.2	72.7	143.3
1983	65.1	69.4	103.9	77.9	83.6	93.8	62.6	149.8
1984	75.2	73.5	103.7	80.9	93.0	102.4	72.5	141.2
1985	73.9	69.1	102.1	77.2	95.8	107.1	72.4	147.9
1986	76.0	64.9	100.3	73.6	103.2	117.0	75.8	154.5

TABLE VI. MANUFACTURING INDUSTRIES

15. Fabricated Metals

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	2.7	0.9	4.1	1.3	1.4	1.8	-1.3	3.2
1948 / 1965	4.0	1.8	4.6	2.1	1.8	2.1	-0.6	2.8
1965 / 1973	3.9	2.2	5.2	2.5	1.3	1.7	-1.2	3.0
1973 / 1979	0.9	0.3	4.1	0.9	0.0	0.6	-3.1	3.8
1979 / 1986	-0.0	-2.3	1.5	-1.6	1.6	2.4	-1.5	3.9

TABLE VI. MANUFACTURING INDUSTRIES

15. Fabricated Metals

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	39.3	66.1	26.4	58.8	66.9	59.5	149.0	39.9
1949	35.8	58.2	26.3	52.5	68.3	61.5	136.4	45.1
1950	42.8	67.1	28.1	59.9	71.4	63.8	152.5	41.8
1951	46.7	74.8	31.5	66.9	69.8	62.4	148.4	42.1
1952	49.7	75.4	33.2	67.7	73.4	65.9	149.6	44.1
1953	54.9	83.0	35.2	74.2	74.0	66.2	156.1	42.4
1954	50.4	74.2	35.8	67.3	74.9	68.0	141.0	48.2
1955	53.9	78.4	37.9	71.2	75.8	68.8	142.2	48.4
1956	54.9	78.9	40.7	72.2	76.2	69.6	135.1	51.5
1957	56.1	80.2	42.2	73.5	76.2	69.9	132.8	52.6
1958	50.9	72.7	42.4	67.5	75.4	70.1	120.1	58.3
1959	56.6	76.9	43.6	71.2	79.6	73.6	130.1	56.6
1960	56.7	77.1	44.6	71.5	79.3	73.6	127.1	57.9
1961	56.8	74.0	45.6	69.1	82.2	76.8	124.7	61.5
1962	62.0	78.2	47.0	72.8	85.2	79.3	131.9	60.2
1963	64.7	81.0	48.8	75.4	85.8	79.9	132.7	60.2
1964	68.8	83.5	52.1	78.1	88.2	82.5	132.0	62.5
1965	76.1	89.4	56.8	83.8	90.8	85.1	133.9	63.6
1966	83.3	97.4	61.5	91.2	91.3	85.5	135.4	63.2
1967	86.5	100.3	65.9	94.4	91.7	86.2	131.3	65.7
1968	91.2	104.6	70.6	98.7	92.3	87.2	129.0	67.6
1969	95.8	107.5	73.4	101.7	94.2	89.1	130.4	68.3
1970	87.7	98.6	75.1	94.6	92.7	88.9	116.7	76.2
1971	84.0	93.1	76.9	90.3	93.0	90.3	109.2	82.7
1972	92.9	98.5	79.6	95.2	97.6	94.3	116.8	80.8
1973	103.4	106.0	85.1	102.4	101.0	97.5	121.5	80.3
1974	94.3	103.6	91.2	101.4	93.0	91.0	103.4	88.0
1975	83.0	91.0	92.6	91.3	90.9	91.2	89.6	101.8
1976	93.5	95.5	96.3	95.6	97.8	97.9	97.1	100.9
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	104.3	105.5	104.7	105.3	99.1	98.9	99.7	99.2
1979	109.1	108.0	108.6	108.1	101.0	101.0	100.5	100.5
1980	104.2	100.4	111.3	102.2	102.0	103.9	93.7	110.9
1981	103.7	98.4	114.5	101.1	102.5	105.3	90.6	116.3
1982	91.9	86.7	113.0	91.2	100.8	106.1	81.3	130.4
1983	97.2	85.8	113.6	90.6	107.4	113.3	85.6	132.3
1984	110.9	93.9	116.6	97.8	113.5	118.2	95.2	124.2
1985	110.8	93.8	118.8	98.1	112.9	118.1	93.2	126.6
1986	108.8	91.5	120.5	96.5	112.8	118.9	90.3	131.7

TABLE VI. MANUFACTURING INDUSTRIES

16. Machinery, except Electrical

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	4.6	1.1	4.4	1.7	2.8	3.5	0.1	3.3
1948 / 1965	3.4	1.6	4.4	2.0	1.4	1.8	-1.0	2.8
1965 / 1973	4.4	2.2	5.4	2.8	1.5	2.1	-0.9	3.1
1973 / 1979	3.4	2.4	4.9	3.0	0.4	0.9	-1.4	2.4
1979 / 1986	8.8	-2.6	3.0	-1.1	10.0	11.6	5.6	5.7

TABLE VI. MANUFACTURING INDUSTRIES

16. Machinery, except Electrical

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	37.7	63.9	27.1	55.6	67.8	59.0	139.0	42.5
1949	33.5	53.2	27.2	47.3	70.9	63.1	123.3	51.2
1950	35.5	57.0	28.6	50.6	70.2	62.3	124.0	50.3
1951	46.1	70.8	32.2	62.1	74.2	65.1	143.0	45.5
1952	50.7	72.7	34.3	64.0	79.1	69.7	147.8	47.2
1953	49.6	73.6	36.3	65.2	76.1	67.4	136.5	49.4
1954	44.4	64.9	36.8	58.5	75.8	68.4	120.5	56.8
1955	45.3	67.8	38.6	61.2	74.0	66.8	117.2	57.0
1956	50.2	74.1	41.2	66.6	75.3	67.8	121.8	55.7
1957	47.4	72.9	42.9	66.1	71.7	65.0	110.6	58.8
1958	40.0	61.1	43.1	57.0	70.2	65.5	92.8	70.6
1959	46.5	67.3	44.8	62.2	74.9	69.2	103.8	66.6
1960	46.5	67.9	45.6	62.8	74.0	68.4	101.9	67.2
1961	46.5	65.2	46.3	60.9	76.3	71.3	100.2	71.1
1962	52.0	69.2	48.6	64.5	80.5	75.1	106.9	70.2
1963	54.1	71.7	50.1	66.8	81.0	75.4	108.1	69.8
1964	60.7	76.3	53.0	71.0	85.4	79.5	114.5	69.4
1965	66.5	83.6	56.8	77.5	85.8	79.6	117.2	67.9
1966	74.0	93.5	61.9	86.3	85.7	79.1	119.6	66.2
1967	74.5	94.1	66.1	87.8	84.8	79.1	112.6	70.3
1968	74.6	92.5	68.7	87.1	85.6	80.7	108.6	74.3
1969	77.8	96.3	73.2	91.1	85.3	80.8	106.2	76.0
1970	77.8	91.7	76.2	88.3	88.2	84.8	102.1	83.1
1971	72.5	83.0	76.7	81.6	88.9	87.4	94.5	92.5
1972	82.4	88.9	78.9	86.6	95.1	92.7	104.5	88.7
1973	93.7	99.6	86.2	96.6	97.0	94.1	108.6	86.6
1974	95.9	103.9	93.3	101.5	94.5	92.4	102.8	89.8
1975	87.4	94.3	93.5	94.1	92.8	92.7	93.5	99.2
1976	93.2	94.9	96.3	95.2	97.9	98.2	96.8	101.5
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	108.0	108.4	107.1	108.1	99.9	99.6	100.8	98.8
1979	114.3	115.1	114.8	115.0	99.4	99.3	99.5	99.8
1980	115.3	114.1	121.4	115.7	99.7	101.1	95.0	106.4
1981	120.8	113.4	127.4	116.5	103.7	106.6	94.8	112.4
1982	109.1	99.9	129.8	106.6	102.4	109.2	84.1	129.9
1983	118.5	91.9	130.4	100.5	117.9	129.0	90.9	141.9
1984	156.7	102.7	137.7	110.5	141.8	152.6	113.8	134.1
1985	187.5	101.0	140.2	109.7	170.9	185.7	133.7	138.9
1986	205.7	95.9	141.4	106.1	193.8	214.4	145.4	147.4

TABLE VI. MANUFACTURING INDUSTRIES

17. Electrical Machinery

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	6.5	2.2	5.9	2.8	3.6	4.3	0.5	3.7
1948 / 1965	7.8	3.2	5.2	3.4	4.2	4.5	2.4	2.0
1965 / 1973	5.9	2.4	7.6	3.1	2.7	3.5	-1.6	5.2
1973 / 1979	5.4	1.1	5.2	1.8	3.5	4.3	0.2	4.1
1979 / 1986	5.0	0.4	6.3	1.7	3.3	4.6	-1.1	5.9

TABLE VI. MANUFACTURING INDUSTRIES

17. Electrical Machinery

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	15.7	51.3	19.9	45.1	34.7	30.5	78.8	38.7
1949	14.4	44.1	19.9	39.3	36.6	32.6	72.4	45.1
1950	17.5	52.4	20.9	46.2	37.9	33.4	83.7	39.9
1951	20.9	59.2	23.4	52.1	40.0	35.2	89.1	39.6
1952	25.5	63.7	24.9	56.0	45.5	40.0	102.5	39.1
1953	26.5	71.4	26.4	62.5	42.3	37.1	100.4	36.9
1954	23.8	62.1	26.8	55.1	43.1	38.2	88.7	43.1
1955	25.5	65.5	28.1	58.1	44.0	39.0	90.9	42.9
1956	27.8	70.0	30.0	62.0	44.8	39.7	92.7	42.8
1957	28.8	70.2	31.1	62.4	46.1	41.1	92.6	44.4
1958	27.1	64.8	31.1	58.1	46.7	41.9	87.2	48.0
1959	32.6	73.3	33.0	65.3	49.9	44.5	98.9	45.0
1960	34.2	75.7	34.5	67.5	50.6	45.1	99.1	45.5
1961	36.1	76.4	36.1	68.5	52.7	47.2	99.8	47.3
1962	40.6	81.4	39.1	73.0	55.6	49.9	103.9	48.0
1963	44.5	80.3	40.6	72.5	61.5	55.5	109.6	50.6
1964	47.0	80.3	42.9	73.0	64.5	58.6	109.6	53.4
1965	56.0	87.3	47.3	79.5	70.5	64.1	118.4	54.2
1966	64.7	100.8	54.6	91.7	70.5	64.2	118.4	54.2
1967	67.2	101.9	59.7	93.7	71.7	65.9	112.6	58.6
1968	70.3	103.3	63.8	95.7	73.5	68.0	110.2	61.8
1969	75.2	105.2	68.8	98.2	76.6	71.5	109.4	65.4
1970	69.4	99.1	72.1	93.9	73.9	70.1	96.3	72.8
1971	69.6	92.7	73.9	89.1	78.1	75.1	94.1	79.8
1972	77.4	97.0	77.1	93.2	83.0	79.7	100.3	79.5
1973	88.6	105.2	85.3	101.4	87.4	84.2	103.9	81.0
1974	82.6	103.8	90.6	101.3	81.5	79.5	91.1	87.3
1975	75.9	89.4	90.4	89.6	84.7	84.9	83.9	101.2
1976	83.8	93.7	94.9	93.9	89.2	89.4	88.2	101.4
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	114.1	106.7	106.9	106.7	107.0	107.0	106.8	100.2
1979	121.6	112.4	115.7	113.1	107.5	108.1	105.0	102.9
1980	126.5	110.0	124.2	112.7	112.2	115.0	101.8	112.9
1981	129.8	110.6	132.5	114.8	113.0	117.4	97.9	119.8
1982	124.8	105.0	137.8	111.3	112.1	118.8	90.5	131.2
1983	133.7	107.9	145.0	115.0	116.2	123.9	92.2	134.4
1984	156.1	119.8	159.4	127.4	122.5	130.2	97.9	133.0
1985	169.2	118.3	168.3	127.9	132.3	143.0	100.5	142.3
1986	171.5	115.4	176.9	127.2	134.8	148.6	96.9	153.3

TABLE VI. MANUFACTURING INDUSTRIES

18. Transportation Equipment

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	3.9	1.4	4.0	2.0	1.9	2.5	-0.1	2.6
1948 / 1965	6.7	2.8	4.6	3.1	3.5	3.8	2.0	1.7
1965 / 1973	2.4	0.2	4.8	1.2	1.2	2.2	-2.3	4.6
1973 / 1979	1.4	0.8	2.9	1.3	0.1	0.6	-1.4	2.1
1979 / 1986	1.3	0.0	2.7	0.8	0.5	1.2	-1.4	2.7

TABLE VI. MANUFACTURING INDUSTRIES

18. Transportation Equipment

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	25.5	63.0	30.3	54.3	46.9	40.4	84.1	48.0
1949	25.7	60.5	29.8	52.3	49.2	42.5	86.5	49.2
1950	33.2	65.7	31.2	56.5	58.7	50.5	106.2	47.5
1951	37.6	78.9	35.5	67.3	55.9	47.7	106.0	45.0
1952	45.1	91.6	38.0	77.3	58.4	49.3	118.9	41.4
1953	55.0	106.2	40.2	88.5	62.1	51.8	136.8	37.8
1954	51.0	92.6	41.2	78.9	64.6	55.0	123.8	44.4
1955	58.2	99.9	43.8	84.9	68.5	58.2	132.7	43.9
1956	51.0	97.8	47.9	84.5	60.4	52.2	106.5	49.0
1957	54.8	99.7	50.1	86.5	63.3	54.9	109.4	50.2
1958	46.5	83.3	50.2	74.6	62.3	55.8	92.7	60.2
1959	50.7	88.2	51.8	78.6	64.6	57.6	97.9	58.8
1960	51.0	86.1	51.7	77.0	66.2	59.2	98.6	60.1
1961	49.5	80.8	52.5	73.3	67.5	61.3	94.2	65.0
1962	57.7	89.0	54.5	79.9	72.3	64.9	105.9	61.3
1963	65.5	92.8	57.2	83.4	78.5	70.6	114.6	61.6
1964	68.6	92.4	60.3	84.0	81.7	74.2	113.7	65.3
1965	76.5	100.7	64.5	91.2	83.8	75.9	118.5	64.1
1966	83.9	109.8	71.8	99.8	84.1	76.4	116.8	65.4
1967	83.6	108.8	79.1	101.0	82.8	76.9	105.7	72.7
1968	92.2	115.2	83.7	106.9	86.2	80.0	110.2	72.6
1969	88.5	112.3	88.0	106.0	83.6	78.8	100.6	78.3
1970	71.9	94.7	87.0	92.7	77.5	75.9	82.6	91.9
1971	78.7	90.9	87.4	90.0	87.4	86.6	90.0	96.2
1972	83.6	94.3	90.2	93.2	89.7	88.6	92.7	95.7
1973	92.3	102.4	94.1	100.2	92.1	90.2	98.1	91.9
1974	85.0	95.8	96.2	95.9	88.6	88.7	88.4	100.4
1975	79.7	87.7	96.1	89.9	88.7	90.9	82.9	109.6
1976	91.0	94.2	97.8	95.2	95.6	96.6	93.0	103.8
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	106.6	106.1	105.3	105.9	100.6	100.5	101.2	99.3
1979	100.6	107.3	111.5	108.5	92.7	93.7	90.2	103.9
1980	84.8	96.9	115.6	101.8	83.3	87.6	73.4	119.3
1981	79.4	97.3	119.8	103.2	76.9	81.6	66.3	123.1
1982	72.9	89.2	122.4	98.0	74.4	81.6	59.5	137.1
1983	91.0	92.7	122.5	100.5	90.5	98.2	74.3	132.1
1984	106.9	102.5	128.0	109.3	97.8	104.2	83.5	124.9
1985	109.9	106.6	132.0	113.3	97.0	103.1	83.3	123.8
1986	109.9	107.6	134.8	114.8	95.7	102.1	81.5	125.3

TABLE VI. MANUFACTURING INDUSTRIES

19. Instruments

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	5.9	2.3	4.8	2.9	3.0	3.5	1.1	2.4
1948 / 1965	6.5	2.6	4.5	2.8	3.6	3.8	1.9	1.9
1965 / 1973	6.0	2.6	6.5	3.5	2.4	3.2	-0.5	3.8
1973 / 1979	6.6	3.6	4.3	3.8	2.7	2.9	2.2	0.7
1979 / 1986	4.1	0.4	4.0	1.5	2.5	3.6	0.0	3.6

TABLE VI. MANUFACTURING INDUSTRIES

19. Instruments

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	17.4	48.5	24.2	42.3	41.2	35.9	72.1	49.9
1949	16.9	43.7	23.5	38.5	44.0	38.7	71.9	53.8
1950	20.0	47.4	25.2	41.6	48.0	42.2	79.3	53.2
1951	24.4	57.7	29.2	50.4	48.4	42.3	83.6	50.7
1952	28.1	63.4	30.9	55.2	50.9	44.3	90.9	48.7
1953	30.6	69.0	32.3	59.8	51.2	44.4	94.7	46.9
1954	30.1	62.0	32.0	54.2	55.5	48.6	94.2	51.6
1955	32.0	62.8	33.9	55.3	57.8	50.9	94.4	53.9
1956	33.8	65.8	36.7	58.1	58.3	51.5	92.3	55.7
1957	32.8	66.0	37.7	58.4	56.2	49.8	87.1	57.2
1958	32.5	61.5	37.3	54.9	59.2	52.8	87.0	60.7
1959	36.5	67.0	39.4	59.5	61.4	54.5	92.8	58.8
1960	37.8	68.3	41.5	61.1	61.9	55.3	91.2	60.7
1961	36.7	67.6	43.1	60.9	60.3	54.3	85.2	63.8
1962	41.1	69.5	45.3	62.8	65.4	59.1	90.7	65.1
1963	43.0	69.7	46.5	63.2	68.0	61.7	92.5	66.7
1964	44.1	70.2	48.5	64.1	68.8	62.9	90.9	69.2
1965	50.9	74.4	51.2	67.9	74.9	68.3	99.3	68.8
1966	58.4	83.6	56.3	76.0	76.8	69.8	103.7	67.3
1967	61.1	86.5	60.5	79.1	77.2	70.6	101.0	69.9
1968	66.3	87.0	64.4	80.5	82.4	76.2	103.0	74.0
1969	73.7	90.0	68.9	83.8	88.0	81.9	107.0	76.6
1970	64.6	85.8	73.5	82.2	78.7	75.3	88.0	85.6
1971	65.6	80.0	76.3	78.9	83.1	82.0	85.9	95.4
1972	73.5	84.3	79.5	82.9	88.7	87.2	92.5	94.2
1973	80.9	91.6	84.9	89.6	90.2	88.2	95.2	92.7
1974	85.4	96.5	92.1	95.2	89.8	88.6	92.8	95.4
1975	84.9	87.7	92.5	89.1	95.3	96.8	91.8	105.4
1976	89.4	93.0	96.7	94.1	95.1	96.2	92.5	104.1
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	107.6	106.7	104.7	106.2	101.3	100.9	102.8	98.1
1979	118.5	113.1	109.4	112.2	105.6	104.7	108.3	96.7
1980	114.8	115.1	114.1	114.9	99.9	99.8	100.7	99.1
1981	124.7	117.9	119.9	118.6	105.2	105.8	104.1	101.7
1982	119.2	114.8	122.7	117.3	101.7	103.9	97.2	106.9
1983	122.0	112.3	126.0	116.5	104.7	108.6	96.8	112.2
1984	133.7	118.1	133.1	122.7	109.0	113.2	100.4	112.7
1985	149.0	119.2	139.4	125.3	118.9	125.0	106.9	116.9
1986	156.4	116.7	144.0	124.9	125.3	134.1	108.6	123.5

TABLE VI. MANUFACTURING INDUSTRIES

20. Miscellaneous Manufactures

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)
Annual Percent Change, Selected Years

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948 / 1986	2.7	-0.4	3.1	0.1	2.5	3.1	-0.4	3.5
1948 / 1965	2.7	-0.2	3.1	0.2	2.6	3.0	-0.4	3.3
1965 / 1973	4.2	0.7	4.3	1.2	2.9	3.5	-0.2	3.6
1973 / 1979	0.6	-0.1	3.8	0.6	0.1	0.8	-3.1	4.0
1979 / 1986	2.5	-2.3	1.1	-1.6	4.1	4.9	1.4	3.5

TABLE VI. MANUFACTURING INDUSTRIES

20. Miscellaneous Manufactures

Indexes of Real Output, Inputs, and Productivity Ratios
(1977=100)

Year	Output and Inputs				Productivity Ratios			
	Real Output	Labor Input	Capital Input	Total Factor Input	Total Factor Productivity	Output per Unit Labor	Output per Unit Capital	Capital-Labor Ratio
1948	39.6	100.6	36.3	87.2	45.4	39.4	109.2	36.0
1949	35.6	90.2	35.4	78.8	45.2	39.5	100.7	39.3
1950	40.8	95.3	37.5	83.3	48.9	42.8	108.7	39.3
1951	42.9	95.9	41.5	84.7	50.6	44.7	103.2	43.3
1952	44.0	93.5	46.0	83.8	52.4	47.0	95.5	49.2
1953	45.7	99.4	49.7	89.3	51.2	46.0	92.1	50.0
1954	44.0	90.9	49.1	82.5	53.3	48.4	89.6	54.0
1955	48.7	93.0	50.5	84.5	57.6	52.4	96.4	54.3
1956	49.0	93.8	52.3	85.5	57.3	52.3	93.8	55.7
1957	48.3	90.1	52.9	82.7	58.4	53.6	91.3	58.8
1958	47.4	86.4	52.6	79.8	59.4	54.9	90.1	60.9
1959	52.9	90.2	53.5	83.0	63.7	58.6	98.8	59.3
1960	52.2	89.7	54.7	82.8	63.0	58.2	95.3	61.0
1961	53.4	87.6	54.7	81.1	65.9	61.0	97.8	62.4
1962	56.3	89.8	56.3	83.2	67.6	62.7	100.1	62.7
1963	56.8	88.5	57.3	82.5	68.9	64.2	99.1	64.7
1964	59.0	90.3	59.1	84.3	70.0	65.3	99.8	65.4
1965	62.7	96.9	61.1	89.9	69.8	64.8	102.6	63.1
1966	67.4	102.4	64.9	95.0	70.9	65.9	103.8	63.4
1967	67.1	98.7	67.1	92.6	72.4	68.0	100.0	68.0
1968	72.3	98.8	68.8	93.1	77.7	73.1	105.1	69.6
1969	76.6	99.4	73.0	94.4	81.1	77.0	104.9	73.4
1970	74.1	96.2	76.1	92.4	80.2	77.1	97.5	79.1
1971	77.9	93.6	78.3	90.7	85.9	83.3	99.5	83.6
1972	86.7	99.5	81.0	96.0	90.3	87.2	107.0	81.5
1973	87.0	102.3	85.8	99.2	87.6	85.0	101.3	83.9
1974	80.8	101.6	90.8	99.5	81.1	79.5	88.9	89.4
1975	85.0	93.1	90.1	92.5	91.8	91.3	94.3	96.8
1976	93.3	96.6	96.2	96.6	96.6	96.5	96.9	99.6
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	97.4	104.7	104.7	104.7	93.0	93.0	93.1	100.0
1979	90.4	101.5	107.6	102.6	88.0	89.0	83.9	106.1
1980	75.6	94.4	111.5	97.7	77.5	80.1	67.8	118.1
1981	90.9	93.6	113.9	97.4	93.3	97.1	79.8	121.7
1982	83.1	88.3	113.1	93.0	89.3	94.1	73.4	128.1
1983	74.3	88.7	113.4	93.3	79.6	83.8	65.6	127.8
1984	108.7	88.4	115.6	93.5	116.2	123.0	94.0	130.8
1985	110.6	86.3	115.4	91.8	120.5	128.2	95.8	133.7
1986	107.6	86.3	116.5	92.0	116.9	124.7	92.3	135.0

The American Productivity Center

Measure of

MULTIPLE-INPUT PRODUCTIVITY

Methodology and Sources of Data

by Elliot S. Grossman and Noreen L. Preston

This paper reviews in detail the methodology and sources of information used in compiling the Multiple Input Productivity Index as published by the American Productivity Center. The methodology used was first developed and refined by Professor John W. Kendrick of George Washington University, as published in his National Bureau of Economic Research Studies (1961 and 1973), and as updated in the study published by John Hopkins University Press in 1980.

The Concept of Productivity

Every production process uses and transforms resources and materials into output. This concept, known as the production function (which relates output to input) applies to any type of production, be it physically oriented such as the production of chemicals, automobiles, clothes and so on, as well as service or intangible types of products, such as education, financial advice, banking services, ballets and such. Conceptually, it doesn't matter whether the output is tangible or intangible or some mixture of both, except that the more intangible types of output and inputs are more difficult to measure.

Productivity arises when the same amounts of inputs yield increasing amounts of output. Therefore, increases in productivity allow our economy to produce more output with the same amount of resources. This net savings of resources over time allows our economy

to support a rising output per capita which represents an increase in our material well-being. Further, by being able to produce increasing amounts of output with the same amounts of input, the cost of producing that output (in terms of the inputs) declines. Thus, productivity gains are a primary weapon in our battle against inflation.

In a dynamic economy such as ours, all components of production are usually rising--output, labor and capital. When we see that the trends in output are rising faster than the trends in inputs, we can say that we are experiencing gains in productivity. For example, since 1948, output of the private business economy has been growing at a rate of 3.2 percent per year. During the same period labor input has been rising at a 1.0 percent rate, and capital, 2.7 percent. Thus, output has been rising faster than inputs. Indeed, multiple input productivity has increased at a 1.7 percent rate during the post-war period.

There are many reasons why productivity increases have been enjoyed. Some of the causes of productivity include: technological advances, innovations in management styles, organizational development, increases in the skills and education of our work force, better mental and physical health, economies of scale, utilization of our physical capital, and many other factors both measurable and unmeasurable.

Alternative Measures of Multiple Input Productivity

There are several alternative methods to measure multiple input productivity including Professor Kendrick's approach, the Divisia index approach championed by Professor Jorgenson, Professor Denison's growth accounting, and econometric approaches. These alternative approaches

are all very similar in terms of their broad concept, but differ in detail. The basic difference between Kendrick's measure of productivity and that used by Professors Jorgenson and Dennison, is that Jorgenson and Denison attempt to incorporate changes in the quality and utilization of labor and capital input directly in their measures. The Kendrick approach makes no such adjustment and therefore the impact of changes in the intensity of use and quality of inputs will show up in the rate of growth of productivity. Broadly speaking, the rate of growth of productivity over any particular time period as measured by Jorgenson's or Denison's methods (versus Kendrick's method) will indicate a lower growth of productivity gain since part of the gain is explained by the factors incorporated in Jorgenson's and Denison's approaches.

Actually measured productivity gain is the growth in output which is not explained by the growth of inputs. This numerical difference is known as the residual or productivity growth. Professor Kendrick takes the approach that the productivity residual can be explained through various statistical and econometric methods and does not have to be "explained away" in the direct measure of productivity. Jorgenson and Denison incorporate part of the explanation of productivity gains in their input measures and, as a result, their productivity residuals are smaller. Conceptually, it makes little difference whether the residual is accounted for before or after the productivity residual is calculated.

OUTPUT: The output used in measuring productivity for the Multiple Input Productivity Index is value added. Value added output is the additional output that is attributable to labor and capital inputs. It is the amount of output that results from the application

of labor and capital excluding intermediate materials and energy. For example, in the production of gasoline, the value of gasoline per gallon may be $0.82 wholesale. In terms of value added, only a small part of this value is attributable to the capital and labor applied at the refining process. The balance of the price in gasoline is a result of the cost of the crude oil and other materials and energy used in refining the oil. Therefore, the value added of petroleum refining may be $0.19 per gallon. Secondly, output is measured in constant 1982 dollars so as to measure increases in volume as opposed to dollars.

LABOR INPUT: The input of labor is measured in terms of hours worked. More correctly, labor is measured in terms of hours paid since no adjustment is made for vacation time, sick leave, personal time, coffee breaks and such, or paid holidays. It would be preferable if the measure could be actual hours worked rather than paid. Keep in mind, however, that labor input is incorporated in the productivity index as an index itself and the purpose is to capture its trend. Therefore, if the difference between hours paid and hours worked has been fairly stable over the postwar period, our inability to measure hours worked will have little effect on our measure of productivity. In general, there has been a slight upward trend in terms of vacation time and paid holidays, but this trend has not been very strong. (If the trend of hours-paid has been stronger than hours-worked, then measured productivity growth is slower, or more downward biased, than it should be.)

Labor input also refers to all persons which includes production workers, non-production workers, self-employed and unpaid family workers. The major source of data on labor input is the Bureau of

Labor Statistics, U.S. Department of Labor.

Capital Input: In the APC measure of Multiple Input Productivity, capital includes only tangible forms: plant and equipment, stocks of inventory, and land. Intangible forms such as human capital, political and social capital, the nation's infrastructure, as well as "working capital" are not included. Capital is measured on a constant dollar basis so as to capture the movement in the volume of capital.

The APC measure of productivity includes gross fixed capital (plant and equipment) rather than net fixed capital. The difference between gross and net is that net fixed capital deducts depreciation from estimates of fixed capital at hand. Using gross fixed capital as one of the inputs into the productivity ratio is based on the assumption that the productive capabilities of fixed capital remain the same throughout its productive life. For example, a printing press is considered to be just as productive after ten years of use as it is during its first year. Net capital assumes that the productive capability of the plant and equipment declines at some constant or even accelerated rate over its lifetime. The approach taken here is that plant and equipment are just as productive at the end of their respective lifetimes as when they are first installed.

The source of data for gross fixed capital is the Bureau of Economic Analysis, Department of Commerce.

The rationale for including stocks of inventories in the measure of capital input is that by having inventories on hand, producers are able to increase the rate of their output without adding additional fixed capital. Therefore, inventory stocks represent part of the productive capabilities of a firm's operation.

Data for stocks of inventories in constant dollars are provided by the Bureau of Economic Analysis, except for some specific industries which are not available on a detailed basis. The BEA provides estimates of inventory stocks for industries grouped by goods such as other durables and other nondurables, and the groups are proportioned among the specific industries using several sources of information.

Imputations for the stock of land are made for all industries except for Farm, where direct estimates are available. The imputations are based on the 1982 ratio of land to depreciable assets as published by the Internal Revenue Service.

Total Capital is simply the sum of fixed capital, stocks of inventory and land.

Multiple Input: Labor input and capital input are not directly additive since their respective units are different. Both inputs are put on index bases (1977=100) and then added together using their respective shares of factor income as weights.

$$\text{Multiple Input Index} = W_L * \text{Labor Index} + W_C * \text{Capital Index}$$

where, W_L is labor share

W_C is capital share

Rather than use one constant share since 1948, the weights are changed periodically and then "linked" together to form a continuous series. The years chosen are 1948, 1959, 1969 and 1978.

Finally, the Multiple Input Productivity Index is calculated by taking the ratio of the output index to the multiple input index:

$$\text{Multiple Input Productivity Index} = \frac{\text{Output Index}}{\text{Multiple Input Index}}$$

Labor share represents the proportion of national (factor) income attributable to the specific sector/industry. The balance of national

income not attributable to labor is applied to capital. Published national income by industry is treated as follows:

National Income
plus capital consumption allowance
equals adjusted National Income

Labor compensation (including benefits)
divided by all persons' ratio
equals adjusted labor compensation

Adjusted National Income
less adjusted labor compensation
equals capital share of factor income

Sources of Data

I. OUTPUT

Sector totals are as published by the Department of Labor, BLS for private business, manufacturing, farm and nonfinancial corporate business, with nonfarm nonmanufacturing derived by deducting manufacturing from nonfarm output. Output for all the manufacturing industries and for mining, construction, railroads, nonrail transportation, communication, public utilities, trade, finance and insurance are gross product originating in constant 1982 dollars from the Survey of Current Business, table 6.2. For real estate, output is gross product originating (SCB) less owner-occupied nonfarm housing and the rental value of nonprofit real estate. Both of these categories are unpublished but are available directly from the BLS. Services output is equal to the sector total for nonfarm nonmanufacturing, obtained as described above, less the sum of output for the eight nonfarm nonmanufacturing industries.

II. HOURS

Hours are as published by the Department of Labor, BLS, for the private business, manufacturing, farm and nonfinancial corporate sectors. Nonfarm nonmanufacturing hours are derived by subtracting manufacturing hours from hours for the nonfarm sector. Hours for the individual two-digit manufacturing and nonfarm nonmanufacturing industries, with the exception of services' hours, are calculated as follows. The number of "Employees on Nonagricultural Payrolls" for the respective SIC codes are multiplied by average weekly hours per employee by SIC and are then multiplied by 52 weeks. Nonagricultural payroll employment and average weekly hours data are available from the BLS publication, Employment and Earnings. In most cases, average weekly hours are available only for production workers. In these cases, it is assumed that the nonproduction employees work the same number of hours weekly as do the production workers.

For each industry, the number of self-employed and the number of unpaid family workers are multiplied by their respective average weekly hours and then by 52 weeks. Data on the number of employees and hours for self-employed and unpaid family workers are compiled by the BLS and are available upon request. These hours are then added to nonagricultural worker hours for each industry.

For the manufacturing industries, the ratio of the sum of these hours to the BLS manufacturing sector hours is calculated; hours for each industry are multiplied by this ratio to ensure that the individual industry hours are consistent with the BLS published total.

In the case of nonfarm nonmanufacturing, the eight individual

industry hours are subtracted from the hours for the sector total and the residual hours for services are derived.

III. FIXED CAPITAL STOCK

Constant dollar gross stock of fixed private nonresidential capital is published by the Department of Commerce, Bureau of Economic Analysis. Recently, these data became available in industry detail and in constant 1982 dollars and incorporate historical revisions in the National Income and Product Accounts. In addition to some definitional and service life changes, new information on the industry distribution of investment derived from the 1982 Economic Censuses, the BEA capital flow table for 1977 and revised plant and equipment expenditures are incorporated in the capital estimates.

Further adjustments are made for two industries. First, real estate also includes tenant-occupied nonfarm residential capital stock. Second, gross stock of fixed capital owned by government enterprises is added to services. The source for these two series is also the BEA. The two-digit SIC manufacturing industries sum to the manufacturing sector, and the nine individual nonfarm nonmanufacturing industries with the adjustments described above sum to the nonfarm nonmanufacturing sector. Equipment and structures for the nonfinancial corporate business sector is gross stock of fixed nonresidential private capital by legal form of organization.

IV. LAND

Land is imputed based on the ratio of land to depreciable assets, both of which are available in the IRS Sourcebook of Statistics of Income for the individual manufacturing and nonfarm nonmanufacturing industries. Sector totals for manufacturing and nonfarm

nonmanufacturing are the sum of the respective industries' land estimates. Farm land is derived with data from the U.S. Department of Agriculture, Economic Research Service. The total value of land and buildings less farm buildings yields farm land valued in current dollars. These estimates are then deflated using average value per acre (1982=100). Land for the nonfinancial corporate business sector is imputed by applying a constant ratio, .03841, to gross fixed capital stock. This ratio is based on a weighted average of the 1982 individual manufacturing and nonfarm nonmanufacturing industry land ratios.

V. INVENTORIES

Manufacturing

The sector total for manufacturing is published in both the Manufacturing and Trade Inventories release and the Survey of Current Business, table 5.11 published by the Department of Commerce, Bureau of Economic Analysis. Estimates of inventories for SIC industries 20, 26, 28, 29, 30, 33, 34, 35, 36 and 37 are published in the Manufacturing and Trade Inventories release. Using the other durables inventory category from the same source, SIC industries 24, 25, 32, 38 and 39 are estimated based on their distribution in the 1982 Census of Manufacturing. The same procedure is followed using the other nondurables inventory category for SIC 21, 22, 23, 27 and 31.

Separate industry detail is not available for the years 1948 through 1957. However, manufacturing inventories are available in aggregate for all durables and all nondurables for this period. The following procedure was employed to estimate this inventory data. Utilizing 1958 industry detail (the earliest available), proportions

were derived for published industries and the aggregate "other" categories. For durables, industry inventories for SIC 33, 34, 35, 36 and 37 were apportioned for the years 1948 to 1957 according to their 1958 distribution. The balance of durables' inventories representing "other durables"--SIC 24, 25, 32, 38 and 39--was distributed for the 1947-1957 period in the same proportions as were used for these industries for 1958 to the present, i.e., based on Census of Manufacturing data. The same process was applied for nondurable inventories. Specifically, SIC 20, 26, 28, 29 and 30 were allocated based on the actual 1958 distribution and the "other" nondurables portion distributed according to Census of Manufactures inventory data for SIC 21, 22, 23, 27 and 31.

Nonfarm Nonmanufacturing

The sector total for nonfarm nonmanufacturing inventories is derived by deducting manufacturing inventories from nonfarm as published in the Survey of Current Business, table 5.11. Trade is the sum of retail trade and wholesale trade inventories from the same source (also found in the BEA inventory release). The remaining nonfarm nonmanufacturing industry inventories are based on proportions derived from the distribution of end-of-year inventories from the 1982 IRS Statistics of Income.

Farm

Farm inventories are published in the Survey of Current Business, table 5.11.

Nonfinancial

The Federal Reserve measures the change in inventories for the nonfinancial corporate sector in current dollars starting in 1952. Estimates for inventory change from 1948 through 1951 were extrapolated based on the relationship of these data (published in the Flow of Funds accounts) with the current dollar change in nonfarm inventories from the National Income and Product accounts from 1952 to 1985:

$$NCBINV = .62023 + .21822 * GVU \quad (R^2 = .918)$$

where, NCBINV = annual nonfinancial inventory change

GVU = annual nonfarm change in inventories

The initial value of the stock of inventories was set at 88.2% of nonfarm inventories, where 88.2% is the average ratio of corporate to total change in inventories from 1947 to 1957. The current dollar stock of inventories was then deflated to 1982 dollars using the implicit price deflator for nonfarm inventories calculated from tables 5.10 and 5.11 in the Survey of Current Business. Inventories are updated using Flow of Funds inventory change data applied to the stock of inventories in the previous period and converted to constant dollars.

Sector Aggregations

Private Business

Data for the private business sector is the sum of the manufacturing, nonfarm nonmanufacturing and farm sectors.

Manufacturing and Nonfarm Nonmanufacturing

Data by industry for each series--output, hours, fixed capital,

land and inventories sum to their respective sector totals.

Farm and Nonfinancial Corporate Business contain no further detailed breakdowns.

Goods Producing

Each series (output, hours, etc.) for this sector is the sum of the respective series of the manufacturing and farm sectors plus mining and construction.

Service Producing

This sector contains the nonfarm nonmanufacturing industries less mining and construction for all of the data items (output, hours, etc.)

Selected References

Data Sources:

1. U.S. Department of Labor, Bureau of Labor Statistics, Productivity and Cost tables, Washington, D.C. 20212, published most months.

2. U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, published monthly.

3. Board of Governors of the Federal Reserve System, Washington, D.C. 20551, Flow of Funds Accounts.

4. Internal Revenue Service, Sourcebook of Statistics of Income, Corporations, 1982.

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Text References:

1. John Kendrick and Elliot Grossman, Productivity in the United States, The Johns Hopkins University Press, Baltimore, Maryland, 1980.

2. Denison, Edward F. Accounting for U.S. Economic Growth, 1929-1969, Washington, D.C., Brookings Institution, 1974.

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6. Kendrick, John W., Understanding Productivity: An Introduction to the Dynamics of Productivity Changes, Baltimore, The Johns Hopkins University Press, 1977.

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Proportions Applied to Inventory
Manufacturing

1958 to present

Durable Goods		Nondurable Goods	
*SIC	24 .1756	*SIC	21 .2438
	25 .1227		22 .2222
	32 .2060		23 .2436
	38 .3354		27 .2388
	39 .1603		31 .0516
	1.0="other" durables		1.0="other" nondurables

*Based on end of year inventories, Census of Manufactures, 1982

1948 to 1957

Durable Goods		Nondurable Goods	
**SIC	33 .2417	**SIC	20 .3518
	34 .1550		26 .1026
	35 .2059		28 .2670
	36 .0962		29 .2268
	37 .3012		30 .0518
	1.0=82.2% of durables		1.0=66.4% of nondurables

**Based on 1958 proportions of actual durable and nondurable goods inventory data

Durable Goods		Nondurable Goods	
***SIC	24 .1756	***SIC	21 .2438
	25 .1227		22 .2222
	32 .2060		23 .2436
	38 .3354		27 .2388
	39 .1603		31 .0516
	1.0=17.8% of durables, derived "other"		1.0=33.6% of nondurables, derived "other"

***Based on proportions,end of year inventories,Census of Manufactures,1982

Note: SIC 20,26,28,29,30,33,34,35,36,37 inventory data available from 1958 to present, Manufacturing and Trade Inventories, Department of Commerce Bureau of Economic Analysis

Proportions Applied to Inventories
Nonfarm Nonmanufacturing

Mining	.1023
Construction	.2643
Railroad Transportation	.0262
Nonrail Transportation	.0380
Communications	.0723
Public Utilities	.2159
Trade	****
Finance & Insurance	.0878
Real Estate	.0523
Services	.1408

Proportions are based on distribution of inventories, 1982 Statistics of Income, Department of the Treasury, IRS

****direct estimate from Manufacturing and Trade Inventories, Department of Commerce, Bureau of Economic Analysis

Ratio of Land to Depreciable Assets

NONFARM NONMANUFACTURING	RATIO
Mining	.0284
Contract Construction	.0889
Transportation	
Railroad	.0096
Nonrail	.0194
Communications	.0034
Public Utilities	.0048
Trade	.0638
Finance & Insurance	.1088
Real Estate	.3155
Services	.0611

MANUFACTURING	
Food	.0350
Tobacco	.0376
Textiles	.0100
Apparel	.0259
Lumber	.0293
Furniture	.0350
Paper	.0341
Printing & Publishing	.0336
Chemicals	.0186
Petroleum	.0386
Rubber	.0160
Leather	.0255
Stone, Clay & Glass	.0290
Primary Metals	.0178
Fabricated Metals	.0274
Machinery, exc. electrical	.0181
Electrical Machinery	.0201
Transportation Equipment	.0149
Instruments	.0258
Miscellaneous Manufactures	.0375

Source: Department of the Treasury, IRS, Sourcebook of Statistics of Income, 1982

Relative Weights of Labor: Shares of Gross Income Originating in the U.S. Business Economy by Major Industry Groups (Percentages)

	1948	1959	1969	1978
Private Domestic Business Economy	68.1	67.2	67.2	65.8
Goods Producing	69.5	73.2	73.8	70.3
Service Producing	66.8	62.1	62.0	62.6
Farming	56.4	59.8	49.0	36.2
Manufacturing	70.6	72.1	73.8	71.5
Food	69.3	72.9	73.9	71.7
Tobacco	50.3	40.7	38.9	36.2
Textiles	69.0	77.8	77.2	78.8
Apparel	86.4	90.8	87.3	85.6
Lumber	76.9	80.6	75.3	68.3
Furniture	86.8	87.6	83.4	82.9
Paper	64.0	67.5	71.1	70.1
Printing & Publishing	82.9	82.9	79.2	76.8
Chemicals	54.4	53.4	59.8	61.7
Petroleum	24.1	30.4	25.8	20.2
Rubber	78.1	76.0	78.9	80.0
Leather	80.8	87.4	85.6	79.8
Stone, Clay & Glass	73.4	66.8	74.2	73.1
Primary Metals	69.4	68.8	75.4	75.3
Fabricated Metals	78.9	82.7	82.8	79.1
Machinery, exc. Elec.	77.9	76.3	77.6	75.6
Electrical Machinery	80.6	79.2	80.8	76.8
Transportation Equip.	72.3	73.5	73.8	78.0
Instruments	80.8	76.0	70.5	77.0
Misc. Manufactures	77.5	78.7	81.2	81.4
Nonfarm Nonmanufacturing	68.8	65.0	64.8	64.7
Mining	63.3	69.6	71.9	63.8
Construction	92.0	91.4	88.4	84.7
Transportation	77.1	78.6	76.8	76.0
Railroad	71.4	72.4	69.8	69.9
Nonrail	84.6	82.2	79.3	77.7
Communications	74.1	54.3	51.5	54.6
Public Utilities	49.2	37.8	37.0	36.3
Trade	78.6	84.3	83.2	80.9
Finance & Insurance	73.6	69.8	83.5	86.1
Real Estate	11.0	7.2	7.0	8.5
Services	71.6	62.4	65.7	71.9
Nonfinancial Corporate Business	69.8	71.2	73.6	73.1

Note: Revised, September, 1986 to reflect 1985 NIPA benchmark revisions

The American Productivity Center

In 1977, the American Productivity Center was founded on the belief that major improvements in productivity, quality, and quality of work life are needed if the United States is to retain its competitive advantage. A group of dedicated professionals, led by C. Jackson Grayson, Jr., recognized the need and set to work to find means of improvement, put theories to the test in the real world, and communicate their learnings and the best thinking of others to all who would listen.

The Center is a nonprofit, nonpartisan, privately funded organization. We work with business, labor, government, and academia to reach our goal of competitiveness in an increasingly global marketplace. We now have a staff of approximately fifty researchers, advisors, and communicators. Our membership, which provides approximately thirty percent of our funding, has grown to over 300 of the nation's leading corporations, labor unions, and public sector organizations.

Today, the American Productivity Center is recognized as the country's leading source of information on productivity, quality, and quality of work life. We provide a comprehensive set of services, allowing us to fill the many roles we have established for ourselves:

- Organizing meetings, conferences, and networks to bring together and energize individuals with influence, knowledge, and a bias for action.
- Actively gathering data from every available source; analyzing and storing a wealth of knowledge in the Center's library; and disseminating information through the media, public presentations, and personal contact.
- Researching to find practical improvement methodologies, to identify trends, and remain on the leading edge of a rapidly changing business environment.
- Bringing you the latest developments on the productivity front with regular publications that include newsletters, case studies, issue papers, statistical analyses, and productivity guides. In all, the Center produces approximately 50 publications each year.
- Working in the field with companies across the nation who are dedicated to change and improvement, and sharing our knowledge through a series of training programs.
- Raising these issues to a high level of national awareness through the press and in public forums.

We are the AMERICAN PRODUCTIVITY CENTER, dedicated to preserving our nation's competitive stature by improving productivity, quality, and quality of work life.

A lofty goal, to be sure. But a goal that can be reached. Already, the Center has helped hundreds of firms reap the benefits of improvement. And, each company that reduces its reject rate, improves its utilization of human resources, or increases its output without equal increases in input is a step in the right direction.

Now is the time for you to take your first step. Contact the Development Department of the American Productivity Center and find out how the Center can help you.

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